Command Styles in The Canadian Navy

Principal Authors:

Dr Allan English
Dr Richard Gimblett
Vice-Admiral (retired) Lynn Mason
Mr Mervyn Berridge Sills

KMG Associates
83 Gore St.
Kingston ON, K7L 2L4

Scientific Authority: Dr Ross Pigeau
Head/Command Effectiveness and Behaviour Section
(416) 635-2145

Contract Number: W7711-037874/001/TOR

Defence R&D Canada - Toronto

Conract Report
CR 2005 - 096
31 January 2005

Author

Dr Allan English
KMG Associates

Approved by

Carol McCann

Carol McCann

Head/Command Effectiveness & Behaviour

Approved for release by

K.M. Sutton

Chair, Document Review and Library Committee

The scientific or technical validity of this Contract Report is entirely the responsibility of the contractor and the contents do not necessarily have the approval or endorsement of Defence R&D Canada

© HER MAJESTY THE QUEEN IN RIGHT OF CANADA, 2005 as represented by the Minister of National Defence

© SA MAJESTE LA REINE EN DROIT DU CANADA, 2005 Defence Nationale Canada

Abstract

This report is based on a requirement by the Command Effectiveness and Behaviour Section of DRDC (Toronto) to describe and analyze naval command styles in general and Canadian naval command styles in particular as part of a larger project investigating automated command advisory systems.

The report examines naval command styles in the context of naval culture and organization from historical and contemporary perspectives, using recent theories of command and control (C2) to gain further insight into how naval command styles in general and Canadian naval command styles in particular will be best served by new technical systems. The findings of this study will allow designers of automated command advisory systems to maximize the effectiveness of these systems when they are put into operational situations.

Naval command styles differ among nations, navies and commanders. The factors that influence naval command styles are many and varied, and yet all of them must be considered to understand the phenomenon of naval command. Canadian naval command styles are, therefore, unique in many ways. The small size of the Canadian Navy has imbued its command culture with two characteristics: a magnified impact of commanders' personality on command culture and the confusion of administrative-operational responsibility.

Canadian naval command styles are based on a culture that is founded on the professionalism of Canada's navy. Professional expertise is acquired through long and rigorous training under the supervision and mentoring of experienced naval officers. At the tactical level, effective naval commanders are expected to employ a wide range of leadership behaviours. At the task group level, Canadian naval staffs have effected a judicious combination of technical decision-support with various personal attributes to create a unique style of command. This has led to a preference for Canadians to assume certain senior command appointments in recent Coalition operations.

> The effectiveness of new naval C2 systems and concepts will in large part be `determined by how compatible they are with existing naval command styles. While technology can effect change in some dimensions of naval command styles, other dimensions will be resistant to change, often with good reason. The nature of operations at sea defines many aspects of naval command, and technical systems that take this fact into account will be more effective than those that do not. Likewise naval culture, developed over centuries of war at sea, has many functional aspects that must be considered by those who design technical systems. Therefore, the human dimension of command is critical in devising effective naval C2 systems. This study has shown that a command and control framework based on new technology, to be effective, must be compatible with the organizational culture in which it resides, because successful innovation in large organizations depends on understanding how technology will impact on the organization's culture and vice versa. This report is a first step in examining these issues from the perspective of naval command.

Résumé

Le présent rapport s'appuie sur le besoin de la Section de l'efficacité du commandement et du comportement de RDDC (Toronto) de décrire et d'analyser les styles de commandement dans la marine en général et les styles de commandement dans la marine canadienne en particulier, dans le cadre d'un vaste projet de recherche dans le domaine des systèmes-conseils automatisés sur le commandement.

Le rapport examine les styles de commandement dans le contexte de la culture et de l'organisation de la marine, d'un point de vue historique et contemporain, en faisant appel à de récentes théories sur le commandement et le contrôle (C2) pour mieux comprendre comment les nouveaux systèmes techniques pourraient servir au mieux les styles de commandement dans la marine en général et les styles de commandement dans la marine canadienne en particulier. Les constatations de cette étude permettront aux concepteurs de systèmes-conseils automatisés sur le commandement d'exploiter au maximum l'efficacité de ces systèmes lorsqu'ils sont utilisés dans un contexte opérationnel.

Les styles de commandement naval varient selon les nations, les marines et les commandants. Des facteurs nombreux et variés influencent les styles de commandement, dans la marine, et pourtant il faut tenir compte de chacun d'eux si on veut comprendre le phénomène du commandement naval. Ainsi, dans la marine canadienne, les styles de commandement sont particuliers à de nombreux égards. Deux caractéristiques de sa culture de commandement sont attribuables à sa taille restreinte : la personnalité de ses commandants y joue un rôle accru et les responsabilités administratives/opérationnelles sont confuses.

Dans la marine canadienne, les styles de commandement s'inspirent d'une culture basée sur le professionnalisme de la marine du Canada. L'expertise professionnelle résulte d'une longue et rigoureuse instruction, sous la supervision et le mentorat d'officiers de marine chevronnés. Au niveau tactique, on s'attend à ce qu'un commandant de forces navales compétent ait recours à un large éventail de comportements de leader. Au niveau du groupe opérationnel, les états-majors de la marine canadienne ont adopté une judicieuse combinaison de systèmes d'aide à la décision technique et de qualités personnelles diverses pour créer un style de commandement unique. C'est pour cette raison que la préférence a été accordée à des Canadiens au moment de pourvoir certains postes de commandement supérieurs dans les récentes opérations de la Coalition.

L'efficacité des nouveaux systèmes et concepts de C2, dans la marine, sera en grande partie déterminée par leur degré de compatibilité avec les styles de commandement naval existants. Bien que la technologie puisse avoir pour effet de modifier certains aspects des styles de commandement dans la marine, d'autres aspects résisteront au changement, souvent à juste titre. La nature des opérations en mer définit de nombreux aspects du commandement naval et les systèmes techniques qui en tiennent compte seront plus efficaces que ceux qui les ignorent. De même, la culture navale, qui s'est développée tout au long de siècles de guerres en mer, comporte de nombreux aspects fonctionnels qui doivent être pris en considération par les concepteurs des systèmes techniques. En conséquence, la dimension humaine du commandement joue un rôle essentiel dans la conception de systèmes de C2 navals efficaces.

Notre étude a démontré que pour être efficace, un cadre de commandement et de contrôle basé sur les nouvelles technologies doit être compatible avec la culture organisationnelle dont il est imprégné, car dans les grandes organisations, pour qu'une innovation remporte du succès, il faut comprendre comment la technologie influencera la culture de l'organisation, et vice versa. Le présent rapport représente une première étape dans l'examen de ces questions, dans la perspective du commandement naval.

This page intentionally left blank

Executive summary

This report is based on a requirement by the Command Effectiveness and Behaviour Section of DRDC (Toronto) to describe and analyze naval command styles in general and Canadian naval command styles in particular as part of a larger project investigating automated command advisory systems. The post-Cold War Revolution in Military Affairs (RMA) has accelerated the tendency to see command and control (C2) in terms of technical systems, based on such concepts as Network Centric Warfare (NCW), sometimes referred to as Network-Enabled Operations. These new C2 systems and concepts may exacerbate the information overload problem that many commanders are experiencing. These new systems are creating a "data revolution" and despite their capacity to collect and distribute vast amounts of data, this capacity will amount to nothing unless commanders and their staffs are able to transform the data into knowledge that can then be used productively. Therefore, the human dimension of command is critical in devising effective C2 systems.

The key to creating an adaptable and effective C2 system is the establishment and nurturing of an organizational culture to support it, because innovation in large organizations is usually constrained more by the organization's culture than technology. Therefore, a critical component of designing and implementing new C2 systems is to have the means to gauge current organizational culture, decide on and articulate any necessary changes, and then have the capability to implement them.

This report examines naval command styles in the context of naval culture and organization from historical and contemporary perspectives. It analyzes the historical findings using recent theories of command and control to gain further insight into how naval command styles in general and Canadian naval command styles in particular will be best served by new technical systems. This study describes and analyzes naval command culture to gain insights into how technical systems can best serve the naval commander. The findings of this study will allow designers of automated command advisory systems to maximize the effectiveness of these systems when they are put into operational situations.

Based on its examination of naval command styles, he report reached the following conclusions:

1. Naval command styles vary among navies and among commanders. These styles are affected by such factors as historical experience, national culture, service culture, personality, individual experience, and technology.

2. Canadian naval culture is directly descended from that of the Royal Navy, with recent influences from a close operating relationship with the United States Navy. This places the Canadian Navy firmly in the Anglo-American tradition of naval command, which has fostered increasingly open and independent command styles. Canadian naval command styles are also a product of the unique Canadian experience of operations at sea. This experience is founded on our nation's role as a "middle power" of modest resources, but committed to an active international involvement generally in partnership with a global power.

3. Another key determinant of Canadian naval command styles is the fact that Canada's navy has always been a small ship navy. This environment has favoured teamwork and cooperation and more reliance on personal power than on the more traditional position power employed in large ship command hierarchies. This may be part of the reason why the Canadian naval culture prides itself in a quite enlightened treatment of its sailors compared to some other navies.

4. Canadian naval command styles are also based on a culture that is founded on the professionalism of Canada's navy. Professional expertise is acquired through long and rigorous training under the supervision and mentoring of experienced naval officers.

5. Command in the Canadian Navy, as with practically all other navies, is practiced at three essential levels: strategic (headquarters ashore, sometimes referred to as "admiralty" after the British practice), operational (formation level at sea, generally now referred to as the "task group") and tactical (ship unit). The small size of the Canadian Navy has imbued its command culture with two characteristics: a magnified impact of commanders' personality on command culture and the confusion of administrative-operational responsibility.

6. At the task group level, Canadian naval staffs have effected a judicious combination of technical decision-support with various personal attributes to create a unique style of command. Canadian commanders' (and their staffs') historical attention to command and control capabilities have made them comfortable in the role of organizing the activities of large numbers of ships. Their cultural background, from a bilingual country with a tradition of multiculturalism, has also reduced their "otherness" in the eyes of potential partners, making them tactful and diplomatic coalition partners. This Canadian naval culture combined with interoperable equipment and doctrine has led to a preference for Canadians to assume certain senior command appointments in recent Coalition operations.

7. From a combined point of view, the Canadian Navy has achieved the "seamless operational integration at short notice" with the US and other allies mandated by the government, particularly the USN given that it sets the world standard for navies in many areas of doctrine and technology. From a joint perspective, however, there are significant command style differences among the Canadian Army, Air Force, and Navy that are evident particularly at the tactical and operational levels. These can become problematic if Canadian forces are working together, such as in a domestic operation.

8. At the ship level, the naval leader is isolated in command and does not have to motivate the crew to follow in the same way that the army leader must. While a ship is filled with specialists, each of whom offers information that is invaluable to the decision-making process, it would be a mistake to construe a ship's captain as head of an organization that operates on the basis of consensus building.

9. Historically, the employment of technical assistance to command has been problematic for many reasons. Foremost among these is the lack of a valid theory to guide commanders. Another important concern is that for a long time technophiles have driven most of the research and acquisition of C2 systems that in turn have been seen as the most

important part of the exercise of command. The relative neglect of the human dimension of command in the past has resulted in a number of serious command failures. Until the human dimension of command is studied as carefully as the technical systems that support commanders, those who exercise command will not have all the resources they require to avoid serious problems in the future.

10. Network Centric Warfare, sometimes referred to as Network-Enabled Operations, is the latest concept to have a major impact on military, especially naval C2 concepts, and it illustrates the tension between the human and technical dimensions of command. The migration of control up the chain of command through new technologies that permit instantaneous communications between commanders ashore and ships at sea has become a major issue. It has been argued that to maintain the integrity of the naval command philosophy a process of "net-centric accountability" must be established. According to this argument, if senior officers and other "peripheral actors" become directly involved in command decisions through NCW, a new accountability paradigm must be developed so that they also share some of the accountability.

11. The Canadian Navy has always been at the forefront of technological change, and yet it has had to manage change within a context of restricted budgets and manpower ceilings. Despite its conservative nature, the Canadian Navy is a world leader in designing ship's systems as well as in developing the complementary training to use the technology effectively.

12. The effectiveness of new naval C2 systems and concepts will in large part be determined by how compatible they are with existing naval command styles. While technology can effect change in some dimensions of naval command styles, other dimensions will be resistant to change, often with good reason. The nature of operations at sea defines many aspects of naval command, and technical systems that take this fact into account will be more effective than those that do not. Likewise naval culture, developed over centuries of war at sea, has many functional aspects that must be considered by those who design technical systems.

13. The human dimension of command is critical in devising effective naval C2 systems. This study has shown that a command and control framework based on new technology, to be effective, must be compatible with the organizational culture in which it resides, because successful innovation in large organizations depends on understanding how technology will impact on the organization's culture and vice versa.

English, A; Gimblett, R; Mason, L; Berridge Sills, M. 2005. Command Styles In The Canadian Navy. DRDC Toronto CR 2005-096, Defence Research and Development (DRDC) Toronto.

This page intentionally left blank

Sommaire

Le présent rapport s'appuie sur le besoin de la Section de l'efficacité du commandement et du comportement de RDDC (Toronto) de décrire et d'analyser les styles de commandement dans la marine en général et les styles de commandement dans la marine canadienne en particulier, dans le cadre d'un vaste projet de recherche dans le domaine des systèmes-conseils automatisés sur le commandement. La Révolution dans les affaires militaires (RAM) de l'après-guerre froide a accéléré la tendance à considérer le commandement et le contrôle (C2) sous l'angle des systèmes techniques, en se basant sur des concepts telles les opérations réseaucentriques, parfois désignées sous le nom de guerre réseaucentrique (GR). Ces nouveaux systèmes et concepts de C2 pourraient exacerber le problème de surabondance d'information auquel sont confrontés de nombreux commandants. Ces nouveaux systèmes créent une « révolution de données » et en dépit de leur capacité de recueillir et de distribuer de grandes quantités de données, cette capacité n'aboutira à rien si les commandants et leurs états-majors ne sont pas en mesure de convertir ces données en connaissances susceptibles d'être utilisées de manière productive. Ainsi, la dimension humaine du commandement joue un rôle essentiel dans la conception de systèmes de C2 efficaces.

Si on veut créer un système de C2 adaptable et efficace, il faut établir et entretenir une culture organisationnelle qui le soutienne, parce que dans les grandes organisations, la culture de l'organisation, plutôt que la technologie, fait habituellement davantage obstacle à l'innovation. En conséquence, pour concevoir et mettre en œuvre de nouveaux systèmes de C2, il est essentiel d'être en mesure d'évaluer la culture organisationnelle en place, de décider des changements à y apporter puis de les articuler et d'avoir ensuite la capacité de les mettre en application.

Le présent rapport examine les styles de commandement dans le contexte de la culture et de l'organisation de la marine, d'un point de vue historique et contemporain. Il analyse les constatations historiques, en faisant appel à de récentes théories sur le commandement et le contrôle (C2) pour mieux comprendre comment les nouveaux systèmes techniques pourraient servir au mieux les styles de commandement dans la marine en général et les styles de commandement dans la marine canadienne en particulier. L'étude décrit et analyse la culture de commandement dans la marine pour comprendre comment les systèmes techniques peuvent servir au mieux le commandant de la marine. Les constatations de cette étude permettront aux concepteurs de systèmes-conseils automatisés sur le commandement d'exploiter au maximum l'efficacité de ces systèmes lorsqu'ils sont utilisés dans un contexte opérationnel.

À la lumière de son examen des styles de commandement dans la marine, le rapport a tiré les conclusions suivantes:

1. Les styles de commandement naval varient selon les nations, les marines et les commandants. Ces styles sont influencés par des facteurs comme l'expérience historique, la culture nationale, la culture du service, la personnalité, l'expérience individuelle et la technologie.

2. La culture navale canadienne est directement issue de la Marine royale, avec certaines récentes influences attribuables à une étroite relation opérationnelle avec la US Navy. Ainsi, la marine canadienne est bien ancrée dans la tradition anglo-américaine du commandement naval, laquelle a favorisé des styles de commandement de plus en plus transparents et indépendants. Dans la marine canadienne, les styles de commandement résultent également de l'expérience canadienne particulière des opérations en mer. Cette expérience repose sur le rôle de notre nation, celui d'une « puissance moyenne » aux ressources modestes, mais déterminée à jouer un rôle actif à l'échelle internationale, généralement en partenariat avec une puissance mondiale.

3. Le fait que la marine du Canada a toujours été composée de petits navires est également un facteur clé des styles de commandement dans la marine canadienne. Un tel environnement a favorisé le travail d'équipe et la collaboration ainsi qu'une plus grande confiance au pouvoir personnel - plutôt que à l'autorité émanant du poste, comme c'est plus généralement le cas dans les hiérarchies de commandement des gros navires. Voilà qui peut en partie expliquer pourquoi la culture navale canadienne s'enorgueillit du traitement compréhensif qu'elle accorde à ses marins comparativement aux autres marines.

4. Dans la marine canadienne, les styles de commandement s'inspirent d'une culture basée sur le professionnalisme de la marine du Canada. L'expertise professionnelle résulte d'une longue et rigoureuse instruction, sous la supervision et le mentorat d'officiers de marine chevronnés.

5. Dans la marine canadienne, comme dans pratiquement toutes les autres marines, le commandement s'exerce essentiellement à trois niveaux : stratégique (quartier général à terre, parfois désigné sous le nom de « amirauté », suivant la pratique britannique); opérationnel (niveau de la formation en mer, maintenant généralement appelé « groupe opérationnel »); et tactique (unité navire). Deux caractéristiques de sa culture de commandement sont attribuables à sa taille restreinte : la personnalité de ses commandants y joue un rôle accru et les responsabilités administratives/ opérationnelles sont confuses.

6. Au niveau du groupe opérationnel, les états-majors de la marine canadienne ont adopté une judicieuse combinaison de systèmes d'aide à la décision technique et de qualités personnelles diverses pour créer un style de commandement unique. L'attention que les commandants canadiens (et leurs états-majors) ont accordée, historiquement, aux capacités de commandement et de contrôle leur a permis de se sentir à l'aise dans un rôle d'organisation des activités de navires nombreux. Leurs antécédents culturels - un pays bilingue ayant une tradition de multiculturalisme - ont également réduit leur « altérité » aux yeux de partenaires potentiels, faisant d'eux des partenaires de la Coalition qui agissent avec tact et diplomatie. Cette culture navale canadienne, combinée à l'équipement et à la doctrine interarmées, a

fait en sorte que la préférence a été accordée à des Canadiens au moment de pourvoir certains postes de commandement supérieurs dans les récentes opérations de la Coalition.

7. Du point de vue de l'interopérabilité, la marine canadienne a réussi « l'intégration opérationnelle parfaite dans un délai réduit » avec les États-Unis et les autres alliés, telle que demandée par le gouvernement, particulièrement avec la US Navy compte tenu que c'est elle qui fixe la norme mondiale, en ce qui concerne les marines, dans nombre de domaines liés à la doctrine et à la technologie. Du point de vue des opérations interarmées, toutefois, on note d'importantes différences dans les styles de commandement entre l'Armée, l'Aviation et la Marine du Canada et elles sont particulièrement évidentes aux niveaux tactique et opérationnel. Ces différences peuvent devenir problématiques si les forces canadiennes travaillent ensemble, dans une opération nationale par exemple.

8. Au niveau du navire, le chef de la marine est isolé dans son commandement et il n'a pas à motiver son équipage à suivre de la même manière que le chef de l'armée doit le faire. Bien que de nombreux spécialistes travaillent à bord d'un navire, et que chacun d'eux contribue au processus de prise de décisions en apportant de précieuses informations, ce serait commettre une erreur que de dire d'un capitaine de navire, en tant que chef d'une organisation, qu'il fonctionne par consensus.

9. Historiquement, le recours à une aide technique pour exercer un commandement s'est révélé problématique pour de nombreuses raisons, la principale d'entre elles étant l'absence de théorie valide pour guider les commandants. Et, autre fait préoccupant, les technophiles ont pendant longtemps piloté la majeure partie de la recherche et de l'acquisition de systèmes de C2 qui à leur tour ont été considérés comme l'élément le plus important de l'exercice du commandement. La négligence relative de la dimension humaine du commandement, dans le passé, a entraîné un certain nombre de défaillances graves du commandement. Tant que la dimension humaine du commandement ne sera pas étudiée aussi consciencieusement qu'on le fait pour les systèmes techniques sur lesquels s'appuient les commandants, les gens qui exercent le commandement n'auront pas toutes les ressources dont ils ont besoin pour éviter de graves problèmes dans l'avenir.

10. Les opérations réseaucentriques parfois désignées sous le nom de guerre réseaucentrique (GR), représentent le plus récent concept à avoir des répercussions majeures sur les activités militaires, tout spécialement les concepts de C2 dans la marine, et elles illustrent la tension qui existe entre les dimensions humaines et techniques du commandement. La migration du contrôle vers le haut de la chaîne de commandement, grâce aux nouvelles technologies qui permettent des communications instantanées entre les commandants à terre et les navires en mer,

est maintenant un problème de taille. On a soutenu que pour maintenir l'intégrité de la philosophie du commandement naval, il faut établir une « responsabilisation réseaucentrique ». Suivant cet argument, si les officiers supérieurs et autres « acteurs périphériques » participent directement aux décisions de commandement par le biais de la GR, il faut élaborer un nouveau paradigme de responsabilisation de sorte qu'ils partageront également une partie de la responsabilité.

11. La Marine canadienne a toujours été à l'avant-garde du changement technologique; pourtant, elle a dû gérer le changement dans un contexte de restrictions budgétaires et de plafonnement de l'effectif. En dépit de sa nature conservatrice, la Marine canadienne est un leader mondial dans la conception de systèmes destinés aux navires ainsi que dans la mise au point d'une instruction complémentaire visant une utilisation efficace de la technologie.

12. L'efficacité des nouveaux systèmes et concepts de C2, dans la marine, sera en grande partie déterminée par leur degré de compatibilité avec les styles de commandement naval existants. Bien que la technologie puisse avoir pour effet de modifier certains aspects des styles de commandement dans la marine, d'autres aspects résisteront au changement, souvent à juste titre. La nature des opérations en mer définit de nombreux aspects du commandement naval et les systèmes techniques qui en tiennent compte seront plus efficaces que ceux qui les ignorent. De même, la culture navale, qui s'est développée tout au long de siècles de guerres en mer, comporte de nombreux aspects fonctionnels qui doivent être pris en considération par les concepteurs des systèmes techniques.

13. La dimension humaine du commandement joue un rôle essentiel dans la conception de systèmes de C2 navals efficaces. Notre étude a démontré que pour être efficace, un cadre de commandement et de contrôle basé sur les nouvelles technologies doit être compatible avec la culture organisationnelle dont il est imprégné, car dans les grandes organisations, pour qu'une innovation remporte du succès, il faut comprendre comment la technologie influencera la culture de l'organisation, et vice versa.

English, A; Gimblett, R; Mason, L; Berridge Sills, M. 2005. Command Styles In The Canadian Navy. DRDC Toronto CR 2005-096, Defence Research and Development (DRDC) Toronto.

Table of contents

Abstract i

Résumé ii

Executive summary v

Sommaire ix

Table of contents xiii

List of figures xv

List of tables xv

Section 1: Introduction 1
    Part 1 – General 1
    Part 2 – Definitions And Theoretical Foundations 3
    Part 3 – Theories of Command 15
    Part 4 – Command In A Military Context 21

Section 2: The Canadian Military Context 37
    Part 1 – Command And Canadian Military Culture 37
    Part 3 – Naval Command And Leadership Qualification 57

Section 3: The Historical Development Of The Anglo-American Naval Command Culture .. 63
    Introduction 63
    The First Age (1545-1860) – The Sailing Navy 63

Section 4: Environmental, Technological And Cultural Determinants Of Canadian Naval Command Styles – An Historical Perspective 89

Section 5: The Development Of Canadian Naval Command And Control Systems 112
    Part 1 – Canadian Naval Culture 112
    Part 2 – Factors That Have Influenced Naval Command 117
    Part 3 – Technological Factors 129

Section 6: Conclusions 143

How have history and naval culture shaped naval command styles up to the beginning of the 21st century? 143

What distinguishes naval command styles from army and air force command styles?144

What are the different levels of naval command? What is the role of staffs in these levels? 145

What distinguishes Canadian naval command style (or styles) from other nations' naval command styles? 146

Is there a set of principles that can be universally applied to all naval services' command styles, regardless of national characteristics or government structure? 148

What is the relationship between naval command and technology? 149

Summary 150

Annexes 153

Annex A – Biographies of the Principal Authors 153

List of figures

Figure 1. Inter-relationships of Command, Management & Leadership....6
Figure 2. Leadership Styles....49

Figure 3. Air Force Leadership....52

Figure 4. Naval Leadership....57

Figure 5. Data Link UHF Radio Net....135

Figure 6. Contact Reporting Radio Voice Circuit....136

Figure 7. CCS 280 and Warfare Sub Systems....139

List of tables

Table 1. Relationship of Major Leadership functions....8

Table 2. Command and Control as Actions....16

Table 3. Cultural Assumptions in the Canadian Naval Service in the Second World War....54

Section 1: Introduction

Part 1 – General

Background. This report is based on a requirement by the Command Effectiveness and Behaviour Section of DRDC (Toronto) to describe and analyze naval command styles in general and Canadian naval command styles in particular as part of a larger project investigating automated command advisory systems. Within the larger concept of command and control, Western military commanders have been focused, for most of the 20th century, on the mechanisms through which command and control is achieved, especially the technical means to transmit and receive information, and the diagrammatic and definitional means to explain command relationships. The post-Cold War Revolution in Military Affairs (RMA) has accelerated this tendency to see command and control in terms of technical systems, such as network-centric warfare. New command and control systems and concepts, such as network-centric warfare, based on the RMA may, however, exacerbate the information overload problem that many commanders are experiencing. These new systems are creating a "data revolution" and despite their capacity to collect and distribute vast amounts of data, this capacity will amount to nothing unless commanders and their staffs are able to transform the data into knowledge that can then be used productively. Therefore, the human dimension of command is critical in devising effective command and control systems.

The key to creating an adaptable and effective command and control system is the establishment and nurturing of an organizational culture to support it, because innovation in large organizations is usually constrained more by the organization's culture than technology. Whatever technical and structural solutions are chosen in planning a command and control system, programs and policies must also be devised to create an organizational culture that both enables the other elements of the system and enhances the staff's ability to learn. However, recent research has shown that Western armed forces have not been particularly successful in this regard, as in some cases dysfunctional military cultures appear to be frustrating the best intentions of some commanders.[1] Therefore, a critical component of designing and implementing new command and control systems is to have the means to gauge current organizational culture, decide on and articulate any necessary changes, and then have the capability to implement them.

Therefore, this report will examine naval command styles in the context of naval culture and organization from historical and contemporary perspectives. It will analyze the historical findings using recent theories of command and control to gain further insight into how naval command styles in general and Canadian naval command styles in particular will be best served by new technical systems. Because Canadian naval command in the post-Cold War world will normally be exercised in a joint and combined context, the study will examine historical and current naval command experience in national, joint, and combined contexts.

---

[1] See Allan English, *Understanding Military Culture: A Canadian Perspective* (Montreal & Kingston: McGill-Queen's Univ. Press, 2004) chapters 4, 5, and 6 for a detailed discussion of this issue in the Canadian and American military context.

Theories of command and control suggest that naval command culture will be most receptive to technical systems that complement that culture. This study will, therefore, describe and analyze naval command culture to gain insights into how technical systems can best serve the naval commander. The findings of this study will allow designers of automated command advisory systems to maximize the effectiveness of these systems when they are put into operational situations.

Approach and Methodology. This project will support DRDC research into naval command styles in general and Canadian naval command styles in particular. The study will take into account the naval culture and organization in analyzing naval command styles. For example, there are different levels of naval command: the captain of a single ship; the commander of a task group; and (with these latter two tending to be primarily "at-sea" commands) the commander of a formation or theatre, more typically stationed ashore. An important aspect that has yet to be satisfactorily developed in either the academic or the professional military literature is the notion that the nature of the sea ("it is one") suggests that naval command is at once both strategic and tactical, with little relevance to the operational level of war. Another factor to be considered is the relationship of naval command to technology, both in the sense of decision-making aids and in the sense of the operating environment. Finally, the role of staffs, and how naval staffs (admiralty and shipboard) have been affected by the nature of naval command must be considered.

The project will investigate naval command styles in general and Canadian naval command styles in particular guided by the following broad issues:

- how have history and naval culture shaped naval command styles up to the beginning of the 21st century?
- what distinguishes naval command styles from army and air force command styles?
- what are the different levels of naval command? What is the role of staffs in these levels?
- what distinguishes Canadian naval command style (or styles) from other nations' naval command styles?
- is there a set of principles that can be universally applied to all naval services' command styles, regardless of national characteristics or government structure?
- what is the relationship between naval command and technology?

The wide ranging nature of this project has required input from diverse disciplines as well as from practitioners of naval command. This approach has resulted in a somewhat eclectic view of naval command. Therefore, two frameworks have been selected as unifying themes for the report. The first provides a way of distinguishing between leadership and command in a naval context. Since the concepts of leadership and command are often conflated in the literature and in practice, for the purposes of this report and based on emerging CF doctrine on leadership and command, leadership is viewed as an influence activity, potentially done by anyone, and command is viewed as a creative and purposeful act reserved for those with legitimate authority.

The second unifying framework is what is called the "environment-technology-culture triad," where the three factors of environment (the sea), technology (a major control mechanism for exercising command), and culture (service, organizational, and national) are taken to be the most important factors that impact on naval command styles.

Part 2 – Definitions And Theoretical Foundations

This section of the paper lays the conceptual base for the study by providing definitions and theoretical foundations to support the discussion that follows. This section is based on the material found in *Leadership in the CF: Conceptual Foundations* (draft dated 9 Jun 2004) as it provides an excellent summary of the literature in the field and will soon be authoritative guidance for the practice of leadership and command in the CF. It is quoted extensively here because it the document is not yet widely available.

Leadership, Command, and Management

Leadership. The terms command, leadership, and management are often used interchangeably in discussions of command styles; therefore, this part of the report will define these terms and explain the relationship among them to bring greater clarity to the discussion that follows.

Effective leadership in the Canadian Forces is defined as:

> Directing, motivating, and enabling others to accomplish the mission professionally and ethically, while developing or improving capabilities that contribute to mission success.[2]

Leadership in the CF elaborates this definition by explaining that "leadership involves influencing people to achieve some objective that is important to the leader, the group, or the organization." It goes on to say that leaders influence their followers' behaviour by shaping and changing the environment or organization in which they work.

In this context, leadership is viewed as an essential skill for commanders and managers to possess, but it is not the same thing as command or management because leadership may be exercised by anyone, regardless of organizational position. As we shall see, every group has its leaders, and mutineers are an extreme example of what is often referred to as "emergent" leadership, where even relatively junior military personnel can influence the behaviour of others. The essence of command, on the other hand, is the authority delegated to a commander and command may only be exercised down the chain of command.3

---

[2] *Leadership in the CF: Conceptual Foundations* (draft dated 9 Jun 2004), p. 2-17. The concept of professionalism in a Canadian military context is discussed in DND, *Duty with Honour: The Profession of Arms in Canada* (Kingston, ON: Canadian Defence Academy, 2003).

Command. The key distinction between command and leadership is that command is based on formally delegated authority. This is reflected in the NATO definition of command as "the authority vested in an individual of the armed forces for the direction, co-ordination, and control of military forces." Command may also be described in terms of functions or activities performed by a military commander and often includes such things as planning, problem-solving, decision making, organizing, informing, directing and leading, allocating and managing resources, developing, co-ordinating, monitoring, controlling. However, "the essence of command is the expression of human will, an idea that is captured in the concept of commander's intent. Nearly everything a commander does – planning, directing, allocating resources, monitoring – is driven and governed by the commander's vision, goal, or mission, and the will to realize or attain that vision, goal, or mission. As such, command is the purposeful exercise of authority – over structures, resources, people, and activities. Not all commanders have been or are good leaders, but leadership is obviously a role requirement of command. But to be fully effective, commanders must also be good leaders. The formal authority that comes with rank and position must be reinforced and supplemented by personal qualities and skills."

Management. Leadership in the CF provides the following incisive summary of how the concept of management fits into notions of leadership and command. "Historically, CF leadership doctrine has treated management as complementary to leadership and as a subsidiary function of command. This is appropriate with respect to the resource-management function, but is an inaccurate characterization of management in general. Theoretical and empirical studies of management clearly indicate that civilian managers have many responsibilities and authorities comparable to those of military commanders. Like command, management is based on formal organizational authority, and like command, entails responsibilities for a similarly broad range of functions – planning, problem-solving and decision making, organizing, informing, directing and leading, allocating and managing resources, developing, coordinating, monitoring, controlling, and so on. What clearly sets military command apart from management are the unique authorities of military commanders to resort to large-scale lethal force, to compel subordinates to go into harm's way, and to dispense a distinct military justice with substantial powers of punishment. But in other respects, there are many functional similarities, including the expectation that commanders and managers will not only lead but that they will lead well."4 A former senior naval commander and Vice Chief of the Defence Staff (VCDS) Vice-Admiral (retired) Gary Garnett explained the relationship this way:

> Every successful senior military commander in history has demonstrated, if not mastery of, at least competence in managing resources. Whether husbanding personnel, baggage animals, ammunition, fuel, food or forage and ensuring that these were provided at the right time and place, and in the right condition and quantity, the skilled application and employment of resources

---

[3] *Leadership in the CF*, p. 1-14.

[4] *Leadership in the CF*, p. 1-10.

> has always been an enduring characteristic of good generalship. Conflict between armed forces from peace support operations to war creates a massive demand for national resources, a demand that has increased exponentially over the past century as warfare has been successively and fundamentally altered by industrialization, mechanization and digitization.[5]

Leadership in the CF argues that the roles of managers "in civilian organizations is functionally equivalent to the command role in the military." However, it is important to note "that the resource-management function – with its emphasis on dollars, quantitative methods, and efficiency – is a subordinate element of both general management and military command. It is this function that is often characterized as the antithesis of, but a necessary complement to, leadership and command."6

The Relationship Among Command, Leadership, and Management

The complexity and "inter-relationships and interconnectedness of command, management, and leadership functions often make it difficult to disentangle the command, management, and leadership effects achieved by individuals in positions of authority. Hence favourable results tend to be attributed to extraordinary leadership even when they may, in fact, be the result of command or management skills, some combination of all three, or other factors – including luck."7

Figure 1, from Leadership in the CF "illustrates the functional inter-relationships of military command, general management, leadership, and resource management. The boxes labelled as military command and general management signify the boundaries of formal organizational authority, and include representative functions associated with the commander and manager roles. While there is clearly an overlap of command and management functions (e.g., planning, decision making, resource management, etc.), the unique authorities of military command are also identified (i.e., the authority to use large-scale lethal force, the authority to put others in harm's way, and the authority to dispense military justice). Leadership is depicted as a function that is partially embedded in the set of role requirements of appointed commanders and managers, but also as behaviour that occurs outside the boundaries of formal authority."8

---

[5] Cited in *Leadership in the CF*, p. 1-11.

[6] *Leadership in the CF*, p. 1-10.

[7] *Leadership in the CF*, p. 1-11.

[8] *Leadership in the CF*, p. 1-11-1-12.

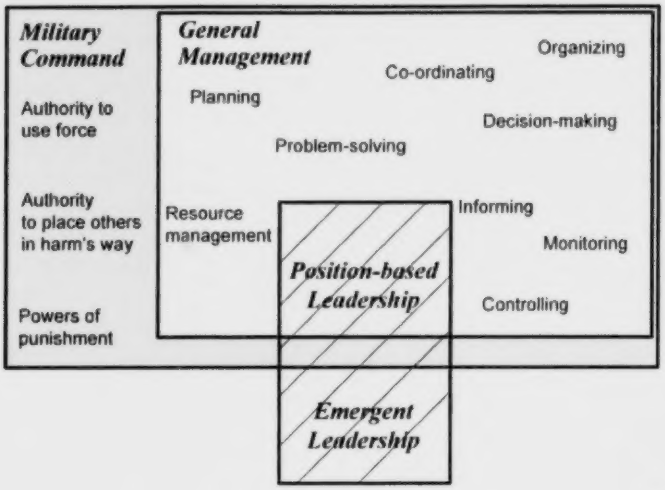

Military Command
Authority to use force
Authority to place others in harm's way
Powers of punishment
General Management
Organizing
Co-ordinating
Planning
Decision-making
Problem-solving
Resource management
Informing
Monitoring
Controlling
Position-based Leadership
Emergent Leadership

Figure 1 Inter-relationships of command, management, and leadership.

Levels of Conflict and Command. The complexity of the relationships among command, leadership, and management are further complicated by the fact that command can be exercised at various levels of conflict. This dimension of command is discussed briefly next. The strategic, operational and tactical levels of conflict are defined in Canadian doctrine. The military-strategic level of does not consistently appear in Canadian doctrine, but because it is used in *Leadership in the CF* and it is a useful construct when discussing levels of command, it is included here.

> The strategic level of conflict is that level at which a nation or group of nations determines national or alliance security objectives and develops and uses national resources to accomplish those objectives. Activities at this level establish strategic military objectives, sequence the objectives, define limits and assess risks for the use of military and other instruments of power, develop strategic plans to achieve the objectives, and provide armed forces and other capabilities in accordance with the strategic plans.[9]
>
> Military-strategic is the level at which military resources are applied to help achieve grand strategic objectives. Military strategy is formulated from political direction and guidance. Military strategy is concerned with military actions, the resources to be allocated and the constraints to be applied.[10]
>
> The operational level of conflict is the level at which campaigns and major operations are planned, conducted and sustained to accomplish strategic objectives within theatres or areas of operations. Activities at this level link tactics and strategy by establishing operational objectives needed to

---

[9] *Canadian Forces Operations*, B-GG-005-004/AF-000, 18 Dec 2000, p. 1-4.

[10] Adapted from *British Air Power Doctrine*, AP 3000, 3rd edition (1999), p. 1.1.2.

> accomplish the strategic objectives, sequencing events to achieve the operational objectives, and initiating actions and applying resources to bring about and sustain those events.
>
> The tactical level of conflict is the level at which battles and engagements are planned and executed to accomplish military objectives assigned to tactical units. Activities at this level focus on the ordered arrangement and manoeuvre of combat elements in relation to each other and to the enemy to achieve combat objectives established by the operational level commander.[11]

These levels of conflict are, however, based on land-centric interpretations of the nature of conflict, and, as will be discussed later, may not always be appropriate in a naval context.

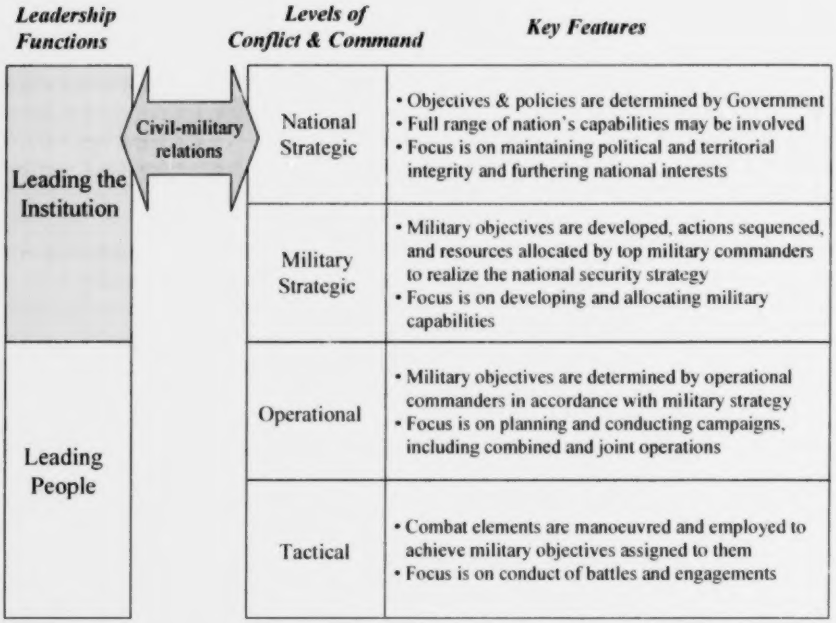
Nevertheless, Table 1 from *Leadership in the CF* illustrates how the major leadership functions can be related to each level of conflict and its associated level of command. It states that at the *tactical* and *operational* levels of conflict "leadership and command are primarily exercised in a direct, face-to-face way and are focused on the planning and conduct of operations." At the *national-strategic* and *military-strategic* levels of conflict, however, "military leadership and command are primarily concerned with developing military capabilities in support of national security objectives and allocating those capabilities to operational commanders so that they can conduct assigned routine or contingency operations."[12]

---

[11] *Canadian Forces Operations*, p. 1-5.

[12] *Leadership in the CF*, p. 1-12. Table 1-1 from p. 1-13. *Leadership in the CF* notes that there "are some positions (e.g., SACEUR) that may require a commander to perform both strategic and operational roles, that is, to develop strategic capabilities (lead the institution) and to personally conduct campaigns or direct operations (lead people)."

Table 1. Relationship of major leadership functions to levels of conflict and command.



Leadership Functions		*Levels of Conflict & Command*	*Key Features*
Leading the Institution	Civil-military relations	National Strategic	• Objectives & policies are determined by Government • Full range of nation's capabilities may be involved • Focus is on maintaining political and territorial integrity and furthering national interests
		Military Strategic	• Military objectives are developed, actions sequenced, and resources allocated by top military commanders to realize the national security strategy • Focus is on developing and allocating military capabilities
Leading People		Operational	• Military objectives are determined by operational commanders in accordance with military strategy • Focus is on planning and conducting campaigns, including combined and joint operations
		Tactical	• Combat elements are manoeuvred and employed to achieve military objectives assigned to them • Focus is on conduct of battles and engagements

In summary *Leadership in the CF* tells us that even if the concepts of leadership, command, and management can be described in reasonably distinct and clear categories, "reality does not always present an uncomplicated or tidy picture. Command, management, leadership, and other functions are integrally rolled up in the behaviour and actions of one person, so that sorting out what aspects of performance and effectiveness demonstrate good leadership, what shows command, and what reflects something else is not always possible."[13]

The difficulties of distinguishing among leadership, command, and management notwithstanding, as previously noted, for the purposes of this report leadership will be viewed as an influence activity, potentially done by anyone, and command as a creative and purposeful act reserved for those with legitimate authority, as the principal ways of distinguishing between leadership and command in a naval context.

---

[13] *Leadership in the CF*, p. 1-13.

Exercising Command and Leadership

Since command and leadership are inextricably intertwined, it is very difficult to separate behaviours into neat categories associated with each. The following summaries extracted from *Leadership in the CF* describe the following concepts that are relevant to command: 1) sources of a leader's power, and leader characteristics and influence behaviours, 2) leadership at the tactical and operational levels of command, and 3) command at the strategic level. They are summarized here to provide an authoritative CF theoretical foundation for the discussion that follows. A detailed discussion of these issues can be found in the source document.

Leader Power, Characteristics and Influence Behaviours. "Influence is often described as the essence of leadership. Influence is based on social power, which comes in a variety of shapes and sizes. The two major classes of social power are position power (legitimate, reward, coercive, information, and ecological) and personal power (expert, referent, and connection). The legitimate and related powers that come with rank and position in the CF represent an initial line of credit that junior officers and junior NCOs are given to get them started as leaders. Whether they become fully developed effective leaders depends on how carefully they use their position credits and what they do to invest in and augment other capacities for influence. The kinds of personal skills and attributes relevant to leader development include technical knowledge and skills, general cognitive abilities, social skills, personality traits such as integrity and adaptability, and the motivation and professional values to serve effectively in a leadership role."[14]

"Legitimate power is the capacity to impose a sense of obligation or duty on another, and may be based on law, other formal authority such as terms of reference for a specific role or position, and/or social norms and stabilized expectations for a role or position. The formal authority of commanders and other superior officers in the CF is a central feature of military organization under the National Defence Act, and is reflected in the importance attached to rank, marks of respect, the integrity of the chain of command, and the rites and symbols of promotion, commissioning, and change of command."

"Reward power is the capacity to provide others with things they desire or value. Rewards may be tangible (financial, time off), symbolic (promotion, military honours), or social (praise, recognition, support for personal endeavours)...leaders at all rank levels are equally capable of demonstrating appreciation for exceptional effort or a job well done."

"Coercive power is the capacity to take away rewards and privileges or administer sanctions and punishments."

"Information power is the capacity to access and distribute important information, which is typically a function of where one is located in the military hierarchy and communications stream...staff who work closely with people in key appointments also acquire considerable information power."

---

[14] *Leadership in the CF*, p. 5-19.

"Ecological power refers to control over the physical and social environment, resources, technology, and organization of work and thus creates the potential for indirect influence over others."

"Expert power is the capacity to provide others with needed knowledge or advice. It derives from unique knowledge, skill, or experience. Expertise also confers considerable power and influence potential on those specialists who are able to manage an organization's strategic contingencies."

"Referent power is the capacity to provide another with feelings of personal acceptance, approval, efficacy, or worth. It is generally based on the respect and esteem of followers for a leader; it may also derive from followers' identification with and desire to emulate a leader. Qualities that increase referent power include friendliness and likeability, concern for and loyalty to others, courage, authenticity, integrity, and other forms of selfless and benevolent behaviour."

"Connection power refers to the capacity to access useful information, resources, and opportunities. It is similar to information power but should be understood as a broader property of personal networks and relationships, and so, unlike information power, is not tied to a position. Personal contacts and ties with other military professionals, influential figures, or sources of valued expertise represent several forms of connection power, or what is sometimes described as **social capital** [emphasis in original]."[15]

"There are three qualitatively different ways subordinates or others can respond to a leader's influence attempts, namely, commitment, compliance, or resistance. Leaders should strive for commitment, but, to obtain the commitment of others, leaders must be respected and trusted. Hence, a significant part of the leader's relational task involves earning and maintaining the respect and trust of others."

"Generally speaking, influence behaviours are differently suited to different purposes and circumstances. As described here, authoritarian leadership and laissez-faire leadership are considered ineffective and inappropriate influence behaviours for CF leaders. All other influence behaviours identified in the spectrum of influence are considered effective when used in the appropriate circumstances: directive, contingent reward and punishment, achievement-oriented, persuasive, facilitative, supportive, participative, and delegation-based. The influence behaviours cited in the definition of effective CF leadership ("directing, motivating, and enabling others . . .") can be considered as an abbreviated representation of this range of leadership behaviours."

"The paradigm of the transformational leader, which emphasizes a particular sub-set of the above influence behaviours, is a practical model of what CF leaders should aspire to be in an operating environment which demands a clear understanding of the CF's professional purpose and, on occasion, extraordinary personal commitment. In the CF, transformational leaders base their actions on and are guided by the core values of the CF as a professional military institution. They seek to attain significant improvement or change in individual, group, system, and institutional capabilities. And they regard respect and trust as necessary conditions of follower commitment and resilient performance."[16]

---

[15] *Leadership in the CF*, pp. 5-2 – 5-3.

Leadership at the Tactical and Operational Levels of Command. "In very simple and basic terms, leadership at the tactical and operational levels of command and activity is about influencing people to accomplish missions and tasks. Because of the potentially disastrous consequences of human performance errors in military missions and tasks, and of setbacks caused by unexpected events, leaders in tactical and operational teams and units must strive for highly reliable and resilient performance. Acquiring these capabilities demands substantial investments in individual/unit training and development and in other preparatory activities. Leaders must also develop the real-time crisis-recovery skills that will allow them to improvise quickly and effectively when plans go off the rails or when they are taken by surprise. Similarly, leaders have to ensure that whatever lessons experience teaches are well learned."

"A commonly accepted way of thinking about the context in which missions and tasks are carried out is in terms of the leader, the followers, and the situation. Viewed though this lens, the leader's job can be understood as a process of aligning followers (direct influence) and improving situational conditions (indirect influence) to better achieve the leader's intent.17

Command at the Strategic Level. "Institutional leadership is like a double-headed coin, one face turned toward the functioning of the CF as a large national organization comparable to many others, the other toward the functioning of the CF as a distinctive profession, but both inseparable. Who leads the institution? First and foremost, the senior officers and chief warrant officers who serve in key appointments; by association, the subordinate staffs who work directly for senior officers; and finally, anyone with the ability and desire to influence the development of CF strategic or professional capabilities.

"The unique aspect of strategic leadership is the requirement to sustain and develop the high-end systems and capabilities that the CF requires to meet its defence commitments, both now and into the future – that is, to deliver requisite capability. In addition to safeguarding professional capabilities relating to members' sense of social responsibility, expertise, identity, and the military ethos, this is largely accomplished by integrating and sustaining existing systems and by formulating and executing a capability-development strategy oriented to the future. The latter aspect of strategic leadership is a striking illustration of indirect influence; in building bridges to the future, strategic leaders shape and influence performance improvements which they may never see during their tenure."

---

[16] *Leadership in the CF*, p. 5-19.
[17] *Leadership in the CF*, p. 6-26.

"Strategic leaders chart the CF's future direction through the strategic-development cycle, an expansive version of the task-performance cycle that engages similar and parallel processes: analysis, decision-making, the application of direct and indirect influence, active performance monitoring and management. Because of the broad scope of strategy development, senior leaders must, as a matter of course, establish numerous lateral, upward, and external influence relationships. A good part of their leadership job is to use these relationships to position the systems they are responsible for, and the CF, as favourably as possible in the operating environment. If done well, they will create the conditions for operational success and institutional effectiveness."[18]

This summary of CF leadership concepts that are directly applicable to command concludes with a summary of factors affecting leadership and the CF philosophy of leadership from *Leadership in the CF.*

Factors Affecting Leadership. The discussion of the CF leadership model in *Leadership in the CF* concludes, "by emphasizing that the key determinants of CF effectiveness are its people and its systems. The performance of CF members and the performance of various CF systems contribute jointly and independently to the essential outcomes of mission success, member well-being and commitment, internal integration, and external adaptability. However, events are not entirely subject to human control, and hence outcomes are not predetermined even in the best-equipped, best-trained, and best-led military forces. As a quick survey of military disasters will confirm, desired outcomes may be thwarted by human error, natural phenomena, the behaviour of independent actors, equipment failure, chance, and other uncontrollable factors. Consequently, leaders must constantly be alert to the possibility of plans and actions miscarrying and strive to contain or offset identifiable risks. While leaders must be held accountable for results, as well as actions taken or not taken, no blame can be attached for failure if they act conscientiously and give the mission or task their best effort. Results, of course, do reflect back on leaders, affecting their subsequent behaviour and their perceived power; results also have carryover effects on the institution's image, reputation, and related public attitudes. Success almost always has a positive effect on these secondary outcomes, but even a failed mission can bring credit to the CF and its leaders if carried out with intelligence, courage, and discipline."[19]

CF Philosophy of Leadership. "Any organizational philosophy of leadership involves calculated choices about who should lead and how they should lead. For the CF, such choices have to be compatible with the CF's operating conditions and requirements first and foremost, but also with members' expectations, the norms of the profession, and Canadian social and cultural values. These conditions are best satisfied by a philosophy that incorporates the principles of distributed leadership and values-based leadership. The principle of distributed leadership addresses the question of who should lead, while the principle of values-based leadership addresses the question of how CF Officers and NCMs should lead."

---

[18] *Leadership in the CF*, p. 7-26.

[19] *Leadership in the CF*, p. 8-4.

> "Distributed leadership means two things: that the leadership potential of Officers and NCMs down to the lowest level of formal authority should be fully developed and exploited; and that the latent leadership potential of all CF members should also be given an opportunity for development and expression. Granted, individuals differ in their technical skills and other abilities. They also differ in their motivation to assume the responsibilities of leadership and in their self-confidence as leaders. Nevertheless, the importance of operational mission success requires all CF members to understand that they have a personal and professional responsibility to assume a leadership role when there is no superior present to provide direction and when the threat of failure looms or an opportunity presents itself to gain a tactical, operational, or strategic advantage. Such occasions could arise in peace or war or any circumstance in between. This is when their sense of responsibility for the group, the unit, the mission, or the profession should most obviously oblige them to take charge of the situation and others and get the job done."

Distributed leadership appears to be an attempt by *Leadership in the CF* to capture the German command philosophy of *auftragstaktik*, a philosophy that allows subordinates considerable latitude to achieve results with the guidelines set by superiors' intent.[20] *Auftragstaktik* is usually translated as "mission command" by the Canadian Army and "mission-type orders" in the US Army. However, one of the problems with importing concepts like *auftragstaktik* from other military cultures is that they often defy translation not just in linguistic but also cultural terms. For example, the commanding general of the German Army Training and Doctrine Command, Dieter Brand, tells us that the concept of "*Innere Fuhrung* is today inseparably linked with *Auftragstaktik*."[21] However, according to Brand, while the meaning of terms like *auftragstaktik* cannot be fully conveyed by "mission-type orders," a term like "*Innere Fuhrung* cannot be translated at all."[22] This is just one example of the difficulties of importing concepts and terms from other cultures into our own culture framework. This analogy also extends to importing concepts from other services.

> "...values-based leadership means that leaders are to be guided in their decisions and actions by the institutional values that define CF effectiveness: accomplishing the mission; acting as part of a cohesive team; developing and looking after their people; anticipating and adapting to the unexpected; and exemplifying and upholding the civic, legal, ethical, and military norms inherent in the military ethos. This principle speaks to *how* CF leaders should lead. Leadership practice, like service in the CF, should be governed by the ideal of duty with honour. In accordance with these

---

[20] John English, "The Operational Art: Developments in the Theories of War," in B.J.C. McKercher and Michael A. Hennessy, eds. *The Operational Art: Developments in the Theories of War* (Westport, CT: Praeger, 1996), 14. The debate over the merits of the two command systems and how applicable they are in differing military cultures continues today. The following articles are recommended for those who would like to pursue these issues in more detail: Werner Widder, "Battle Command: *Auftragstaktik* and *Innere Fuhrung*: Trademarks of German Leadership," *Military Review* 82, no. 5 (Sep-Oct 2002), 2-9; and Chuck Oliviero, "*Auftrafstaktik* and Disorder in Battle," *The Army Doctrine and Training Bulletin* 4, no. 2 (Summer 2001), 57-9.

[21] Widder, "Battle Command," 4.

[22] Dieter Brand, "The Origins of *freie Operationen*," *Military Review* 80, no. 4 (Jul/Aug 2000), 1.

institutional values, leaders also ought to ensure that they exercise their position and personal power in ways that are most likely to earn respect, trust, and commitment. This norm applies equally to interactions with subordinates, peers, superiors, and anyone else they seek to influence. Hence influence behaviours that reflect a disdain for others (authoritarian behaviour) or a lack of accountability (*laissez-faire* leadership) are not acceptable. On the other hand, influence behaviours associated with superior, or transformational, leadership (exemplary personal commitment to the mission, motivating others through ideas and ideals, individualized consideration of others) are highly congruent with CF institutional values and ought to be cultivated in training and reinforced in operational units and staff organizations."[23]

"Military leadership has never been an easy undertaking, but in today's strategic, military, social, and domestic environments, it has become an especially complex and demanding activity. Hence, whether engaged in combined, joint, or inter-agency operations, military leaders are obliged to strive for cultural, as well as technical and doctrinal, interoperability. They have to be open to new knowledge and different points of view, respect differences, and be able to influence others on the basis of principles and strong interpersonal skills. Because decisions and actions taken at the tactical level can have strategic consequences, they must be skilled in reconciling politically constrained mandates with the pull of moral instincts. They must also be able to balance the freedom of military action granted under a mission-command philosophy with the restrictions imposed by sometimes complex rules of engagement. The authority of command and technical proficiency, once considered adequate for Cold War-era leader development, are not enough in today's environment. The CF needs a new type of military professional and leader, one in whom the qualities of the warrior-technician are supplemented with the skills of the soldier-diplomat. The CF needs leaders – both commissioned and non-commissioned – who are broadly educated, who understand this new interconnected and volatile world, and who are expert in conflict resolution in its broadest sense – from traditional warfighting to humanitarian and nation-building interventions."[24]

"Today's leaders in the CF must deliver on a broad range of demanding operational roles within a limited resource base, must continue to strive for a common identity and teamwork within a more varied and complicated human resource landscape, and must also satisfy heightened expectations of military professionalism. And all this must be accomplished in the context of traditional defence responsibilities."[25]

---

[23] *Leadership in the CF*, p. 8-5.
[24] *Leadership in the CF*, Intro-4.
[25] *Leadership in the CF*, Intro-5.

Part 3 – Theories of Command

General

The previous part of this paper dealt with general theories that could be applied to leadership and command. This section of the paper focuses on those theories and concepts that are most directly applicable to command in a military context.

The theoretical study of command in a military context is still immature, and terms like "inchoate," "diffuse," "conjectural" and "seemingly random" have been used to describe current approaches to this subject. Furthermore, in practice, there is confusion among some branches of the military in terms of how they describe their approach to command. Some endorse the concept of mission command, others endorse a philosophy of centralized control and decentralized execution, while in other services the notion of network-centric C2 is prominent.[26] This section of the essay will give an overview of some of the main theoretical and practical issues related to command at the operational level. In attempt to put some order into the discussion, it will rely on many of the definitions and concepts put forward by Canadian researchers Ross Pigeau and Carol McCann of Defence Research and Development Canada (DRDC) - Toronto, because the framework of command that they are developing is one of the most rigorous that is available and because it is culturally compatible with Canadian concepts of command.

The Pigeau-McCann Command Framework

Whether involved in disaster relief, peacekeeping operations or war, the CF deal in human adversity. Inevitably, the CF respond to and resolves this adversity through human intervention. Any new theory of C2 must assert the fundamental importance of the human as its central philosophical tenet. It is the human – e.g., the CF member – who must assess the situation, devise new solutions, make decisions, co-ordinate resources and effect change. It is the human who must initiate, revise and terminate action. It is the human who must (ultimately) accept responsibility for mission success or failure. All C2 systems, from sensors and weapons to organizational structures and chain of command, must exist to support human potential for accomplishing the mission. For example, C2 organizations that are intended to allocate authorities and define areas of responsibility should facilitate the co-ordination of human effort to achieve mission objectives. If the organization hinders this goal – for example, by confusing lines of authority or by imposing excessive bureaucracy – then the human potential necessary for accomplishing the mission is also compromised. The challenge, then, becomes one of specifying those aspects of human potential that should guide C2 development.

---

[26] Ross Pigeau and Carol McCann, "Re-conceptualizing Command and Control," *Canadian Military Journal* 3, no. 1 (Spring 2002), 53.

Pigeau and McCann's framework first distinguishes the concept of command from control, giving pre-eminence to command. They then link the two concepts together in a new definition of C2.

Pigeau and McCann define key terms as follows. Command is "the creative expression of human will necessary to accomplish the mission." And Control is " those structures and processes devised by command to enable it and to manage risk. The function of control is to enable the creative expression of will and to manage the mission problem in order to minimize the risk of not achieving a satisfactory solution. The function of command is to invent novel solutions to mission problems, to provide conditions for starting, changing and terminating control, and to be the source of diligent purposefulness."[27] The functions of command versus control are shown in Table 2.

Table 2. Command and Control as Actions[28]

Commanding	Controlling
To create new structures and processes (when necessary)	To monitor structures and processes (once initiated)
To initiate and terminate control	To carry out pre-established procedures
To modify control structures and processes when the situation demands it	To adjust procedures according to pre-established plans

Command. Their definition of command, one that is markedly different from the standard NATO definition: *Command is the creative expression of human will necessary to accomplish the mission.* Without creativity, C2 organizations are doomed to applying old solutions to new problems, and military problems are never the same. Furthermore, without human will there is no motivation to find and implement new solutions. For example, rarely does the slavish adherence to rules and procedures (e.g., SOPs), devoid of creativity, produce effective organizations. Indeed, as mentioned earlier in this paper, navies traditionally have avoided "doctrine" fearing it would restrict the initiative of their captains at sea. And as most labour unions know, a good method for hampering operational effectiveness is to "work to rule" or to follow only "the letter of the law". Command, therefore, needs a climate of prudent risk taking, one where individuals are allowed to tap inherent values, beliefs and motivations to marshal their considerable creative talents towards achieving common goals.

It follows from their definition that all humans have the potential to command; that command is an inherently human activity that anyone, if they choose, can express. To limit command only to those individuals who have been bestowed with the title of "Commander," begs the question of what command is in the first place. Notice that their definition allows even junior NCMs to command. If, through their will, they are creative in solving a problem which furthers the achievement of the mission, then they have satisfied the requirements for Command.

---

[27] Pigeau and McCann, "Re-conceptualizing Command and Control," 56.

[28] Pigeau and McCann, "Re-conceptualizing Command and Control," 56.

But if all humans can command, on what basis do Pigeau and McCann differentiate command capability? What differentiates the private from the general officer? What key factors influence its expression?

Pigeau and McCann have further refined the notion of command in proposing the concept of "effective command," defined as "the creative and purposeful exercise of legitimate authority to accomplish the mission legally, professionally and ethically."[29] This definition highlights the notion of legitimate authority as the basis of effective command in the military. Even though all humans can command, according to their definition of command, the exercise of command by those not in positions of legitimate authority would probably not be deemed effective command in a military context. In this paper, the term "command" is used to denote "effective command."

Dimensions of Command. They propose that command capability can be described in terms of three independent dimensions: competency, authority and responsibility.

Command requires certain competencies so that missions can be accomplished successfully. For most militaries, *physical* competency is the most fundamental, one that is mandatory for any operational task, from conducting a ground reconnaissance, to flying an aircraft. The second skill set, *intellectual* competency, is critical for planning missions, monitoring the situation, for reasoning, making inferences, visualizing the problem space, assessing risks and making judgments. Missions, especially peace support missions, can be ill-defined, operationally uncertain, and involve high risk. Command under these conditions requires significant *emotional* competency, a competency strongly associated with resilience, hardiness and the ability to cope under stress. Command demands a degree of emotional "toughness" to accept the potentially dire consequences of operational decisions. Finally, *interpersonal* competency is essential for interacting effectively with one's subordinates, peers, superiors, the media and other government organizations. These four aspects describe the broad set of competencies necessary for command.

Authority, the second dimension of command, refers to command's domain of influence. It is the degree to which a commander is empowered to act, the scope of this power and the resources available for enacting his or her will. Pigeau and McCann distinguish between the command authority that is assigned from external sources and that which an individual earns by virtue of personal credibility – that is, between legal authority and personal authority. Legal authority is the power to act as assigned by a formal agency outside the military, typically a government. It explicitly gives commanders resources and personnel for accomplishing the mission. The legal authority assigned to a nation's military goes well beyond that of any other private or government organization; it includes the use of controlled violence. Personal authority, on the other hand, is that authority given informally to an individual by peers and subordinates. Unlike legal authority which is made explicit through legal documentation, personal authority is held tacitly. It is earned over time through reputation, experience, strength of character and personal example. Personal authority cannot be formally designated, and it cannot be enshrined in rules and regulations. It emerges when an individual possesses the combination of competencies that yields leadership behaviour.

---

[29] Ross Pigeau and Carol McCann, "Re-conceptualizing Command and Control," presentation given to Command and Staff Course 31, Canadian Forces College, 3 Sep 2004.

The third dimension of command is responsibility. This dimension addresses the degree to which an individual accepts the legal and moral liability commensurate with command. As with authority, there are two components to responsibility, one externally imposed, and the other internally generated. The first, called extrinsic responsibility, involves the obligation for public accountability. When a military commander is given legal authority, there is a formal expectation by superiors that he or she can be held accountable for resources assigned. Extrinsic responsibility taps a person's willingness to be held accountable for resources. Intrinsic responsibility, the second component of responsibility, is the degree of self-generated obligation that one feels towards the military mission. It is a function of the resolve and motivation that an individual brings to a problem – the amount of ownership taken and the amount of commitment expressed. Intrinsic responsibility is associated with the concepts of honour, loyalty and duty, those timeless qualities linked to military ethos. Of all the components in the dimensions of command, intrinsic responsibility is the most fundamental. Without it, very little would be accomplished.

Command Capability Space and the Balanced Command Envelope. Pigeau and McCann propose that competency, authority and responsibility each define one axis of a 3-dimensional volume that encompasses the entire space of command capability (Figure 1). That is, military members can each be positioned in this space, with their locations specifying the degree and type of command capability they possess. Individuals with high levels of competency, authority and responsibility – i.e., occupying the far upper right-hand corner of the space – represent high levels of command capability, presumably senior officers. Individuals with low levels of competency, authority and responsibility – i.e., occupying the near lower left-hand corner of the space – represent low levels of command capability, presumably junior non-commissioned personnel. Furthermore, they hypothesize that the command capability of each person in a military organization should *ideally* lie inside the *Balanced Command Envelope (BCE),* a diagonal column[30] of space running from low competency, authority and responsibility to high, as shown in Figure 1. Individuals lying outside the BCE have reduced command capability due to an imbalance in one or more of the command dimensions. For instance, an organization may have put an individual in the position of expecting them to take responsibility for a situation for which they lack the authority (e.g., the resources and power) to influence. Alternatively, an organization may under-utilize individuals with high levels of competency by assigning them tasks with too little authority and responsibility. The point is that being off the BCE runs the risk of compromising command effectiveness – that is, of compromising an individual's ability to creatively express their will in the accomplishment of the mission.

---

[30] Pigeau and McCann note that whether the envelope is actually linear, as shown here, or some type of curve, is an empirical question that research can answer.

Control. Pigeau and McCann's human centred definition of command is a powerful tool for deducing some organizational principles (like the BCE). However, the careful reader will notice that simply specifying command characteristics is insufficient for completely describing C2. How can one facilitate and support, for example, command expression? Under what conditions does the creative expression of will best manifest itself? Alternatively, unbridled creativity can lead to uncoordinated activity and organizational chaos. Under what conditions should the creative expression of will be limited or channeled? The answer to these questions is control. Command must execute control both to 1) support and facilitate creative command, while 2) controlling command creativity. Indeed, much of organizational theory can be seen as the attempt to establish the optimum balance between these two extremes.

As we have seen, they defined control as *those structures and processes devised by command both to support it and to manage risk*. Structures are frameworks of interrelated concepts that classify and relate things. The military environment encompasses a host of control structures – e.g., chain of command, order of battle, databases for describing terrain, weapon systems, organizations, etc. Structures are attempts to bound the problem space and give a context within which creative command can express itself. For example, an organization's mission statement is a strategic level structure whose purpose is to give long-term guidance to all members (including managers) in how to apply and channel their motivation and creativity. Once stable structures have been established, processes can be developed to increase efficiency. Control processes are sets of regulated procedures that allow control structures to perform work. They are the means for invoking action. Military rules of engagement (ROE), for example, are formal processes for regulating the use of power – for specifying the way in which military structures (e.g., soldiers, battle groups, and squadrons) are permitted to achieve their objective. Process increases speed of response and reduces uncertainty.

Knowing which structures and processes to invoke in order to achieve operational success is a key issue for command. Recall that their definition specifies that control is *devised by* command. Structures and processes come into existence only through some creative act of human will. What are the guidelines for knowing when new control systems should be developed or when existing control systems should be allowed to continue? Their definition specifies two broad guidelines. First, structures and processes should exist to support command. They should facilitate (or at least not hinder) the potential for creative acts of will. They should facilitate (or at least not hinder) the expression of competencies (physical, intellectual, emotional and interpersonal). They should clarify pathways for legal authority; they should encourage (not impede) the opportunity to establish personal authority. And finally, they should encourage the willing acceptance of responsibility while at the same time increasing motivation in military members. From an organizational perspective, any control system that forces its members off the Balanced Command Envelope will, over time, compromise organizational effectiveness.

The second criterion for knowing when control should be invoked is whether it promotes the management of risk. Pigeau and McCann define risk loosely as anything that jeopardizes the attainment of the mission. This includes uncertainties due to personnel (including the adversary), uncertainties in the environment (e.g., weather, terrain, etc), and the unbridled expression of creativity, since such expression may lead to chaos. Imposing elaborate control structure and process is one way to reduce risk; however, this would come at the expense of inhibiting command creativity -- creativity that, inevitably, is needed for solving new problems.

A tension exists, therefore, between the two reasons for creating control: to facilitate creative command and to control command creativity. Getting the balance right is a perennial challenge for most organizations. Pigeau and McCann suggest that, as a general strategy, militaries should give priority to facilitating creative command. Mechanisms for controlling command creativity should then be used wisely and with restraint.

Command and Control (C2). Their definitions of command and of control (as separate concepts) were designed to highlight a military's most important asset: the human. However, a military is not simply a collection of independent individuals, each of whom pursues his or her own interpretation of the mission. Militaries are organizations for coordinated action, for achieving success by channeling the creative energies of their members towards key objectives. It is this important feature of military capability that they emphasize in their new definition of C2: *C2 is the establishment of common intent to achieve coordinated action.* Without coordinated action military power is compromised. Without common intent coordinated action may never be achieved. In their work Pigeau and McCann have specified some of the issues that must be addressed to elucidate common intent. They include a definition of intent itself (i.e., aim or purpose with associated connotations), an identification of two types of intent (explicit and implicit) and the mechanisms for sharing intent among military members, particularly between superiors and subordinates.

The key concept in their definition is *intent* that is the set of connotations associated with a specific aim or purpose. When a commander gives the order to "Take hill x by 1300 hours," he not only means take hill x explicitly, but also means: "Take hill x while making effective use of your resources, without killing innocent civilians, etc". Thus the commander's intent is made up of two components. The first is *explicit intent*, that part which has been made publicly available through orders, briefings, questions and backbriefs. It includes communications that can be written, verbalized or explicitly transmitted. But it is impossible to be explicit about every minute aspect of an operation. For expediency's sake some things (actually most things) are left uncommunicated. Thus explicit intent carries a vast network of connotations and expectations – the *implicit intent*. Implicit intent derives from personal expectations, experience due to military training, tradition and ethos and from deep cultural values. Much of implicit intent may be unvocalizable. And it is usually acquired slowly -- through cultural immersion or years of experience. Finally, common intent consists of

1) the explicit intent that is shared between a commander and subordinates immediately prior to or during an operation, plus 2) the (much larger) operationally-relevant shared implicit intent that has been developed over the months, and even years, prior to the operation.

Pigeau and McCann's definition of C2 allows for two contrasting kinds of organizational structures. When the proportion of shared explicit intent in a C2 organization is high compared to the amount of shared implicit intent, this is indicative of centralized C2. Members of a centralized organization are explicitly told not only what to do in a particular situation, but how to do it. If the situation changes quickly, however, the generation and dissemination of new orders may not be fast enough. On the other hand, if an organization encourages the sharing of implicit intent, the amount of explicit intent necessary to achieve the same level of common intent will be small. In the military context, de-centralized organizations are consistent with mission command philosophy. De-centralized organizations are flexible, but at the expense of efficiency. Note, though, that Pigeau and McCann's new perspective on C2 is intended to be value free. They do not advocate one organizational structure or the other; they wish only to indicate that the idea of common intent is consistent with both.[31]

This model is one of the leading empirically based models of C2 currently being developed. As a model being developed by Canadian researchers and using Canadian (as well other) data, it is compatible with the organizational culture of the CF, and it deals with the major challenges confronting Canadian decision makers. Therefore, it will be used in this study to evaluate certain aspects of naval command styles.

Part 4 – Command In A Military Context [32]

One way of understanding differences in military command styles is to observe the influence of environment, technology, and culture (both national and organizational) on how command is exercised in different contexts. This environment-technology-culture triad can explain why commanders may react differently to the same circumstances in different environments or services (army, navy, and air force)[33] and why commanders from different nations may also react differently to the same circumstances. This part of the paper will examine selected aspects of the environment-technology-culture triad to provide a context for the concepts in the preceding sections of the paper and the discussion on naval command that follows.

---

[31] This material is excerpted from G.E. Sharpe and Allan English, *Principles for Change in the Post-Cold War Command and Control in the Canadian Forces* (Kingston, ON: Canadian Forces Leadership Institute, 2002).

[32] Most of the material from this part comes from Allan English, "The Operational Art: Theory, Practice, and Implications for the Future," paper written for the Canadian Forces College, March 2003.

[33] Before unification Canada had three separate services: the RCN, the RCAF, and the Canadian Army. After 1 February 1968, when the Canadian Forces Reorganization Act took effect, all Canada's armed forces were unified into a single service – the CF. While the RCN, the RCAF, and the Canadian Army no longer existed as legal entities, people often referred to the navy, air force and army in everyday usage. However, to emphasize the point that Canada no longer had three services, DND bureaucrats coined the rather awkward term "environment," based on the environments in which the sea, air, and land components of the CF operate, to describe these three components of the CF. Since there is only one military service in Canada today, the CF, official DND publications sometimes use the noun "environment" and the adjective "environmental" when referring to the sea, air, and land components

Environment – Some of the Human Dimensions of Military Command

While military command and civilian management have some functions in common and some clear differences, as we have seen, there are other dimensions of military command that are subtly different from the civilian management context – these dimensions are discussed next.

Commanders' Competencies. There is considerable debate over what traits, abilities or characteristics effective commanders must possess to meet the challenges of their responsibilities, particularly at the operational level. A number of those that are prominent in the literature will be discussed next.

Pigeau and McCann assert "that creativity is the most important requirement for command." However, they add that commanders must also possess the resolution and determination to express their creative will to be successful.[34] In addition successful commanders also need a set of competencies. Pigeau and McCann group them under these headings: physical, intellectual, emotional, and interpersonal. Physical competency includes such attributes as physical strength, sophisticated sensory motor skills, good health, agility and endurance. Intellectual competency involves such abilities as reasoning, making inferences, visualizing the problem space, assessing risks and making judgments, as well as the capacity to be creative and flexible, plus a willingness to learn. Generally speaking, militaries acknowledge the need for physical and intellectual competency in their leaders, and expend considerable resources developing these competencies. However, emotional and interpersonal competencies are often neglected to the detriment of missions and the individuals involved. Emotional competence is often associated with "resilience, hardiness and the ability to cope under stress," all of which contribute to the emotional "toughness" commanders often require. Commanders also need the "ability to keep an overall emotional balance and perspective on the situation" as well as "the ability to maintain a sense of humour." Interpersonal competency, the last in this list, is vital if commanders are to be effective interacting with "subordinates, peers, superiors, the media and other government organizations." The social skills upon which this competency is based are trust, respect, perceptiveness and the empathy that promote effective teamwork. Interpersonal competency also depends upon the ability "to articulate one's thoughts, ideas and vision - especially verbally, but also in writing."[35]

Personal Qualities. Rousseau notes that the best predictor of effective decision making in a complex environment like war is not cognitive ability (often represented as intelligence in IQ scores) but the ability to function comfortably in a chaotic environment. This includes the

---

of the CF. Nonetheless, the terms Canadian Army, Navy and Air Force are creeping back into official usage. In this report Canadian Navy (as opposed to Canadian navy) will only be used to refer to the post-unification maritime component of the CF.

[34] Pigeau and McCann, "Re-conceptualizing Command and Control," 55.

[35] Pigeau and McCann, "Re-conceptualizing Command and Control," 58.

ability to work in situations where there is a significant amount of incomplete and wrong information present.[36] This implies that on one hand commanders can be trained and educated to perform certain functions well, whereas on the other hand commanders may require certain innate abilities or personality traits to be effective.

The German tongue-in-cheek adage about the classification of officers describes the situation this way:

> I divide my officers into four classes as follows: The clever, the industrious, the lazy, and the stupid. Each officer possesses at least two of these qualities. Those who are clever and industrious I appoint to the General Staff. Use can under certain circumstances be made of those who are stupid and lazy. The man who is clever and lazy qualifies for the highest leadership posts. He has the requisite nerves and the mental clarity for difficult decisions. But whoever is stupid and industrious must be got rid of, for he is too dangerous.[37]

There appears to be some wisdom in this maxim, but clearly a great deal more empirical research is required before any definitive conclusions can be reached. One of the problems that researchers face is the natural reluctance of military organizations to confront this issue, if it is suggested that some of those who have risen to high rank through a particular promotion system are not temperamentally qualified for high command.[38] And yet we know that at the beginning of a war many senior peacetime military leaders are fired because they are not able to cope with the demands of their new situation.[39] Rousseau attributes their inability to cope to the fact that they have acquired experience in peacetime service but that they have not developed expertise in the art of war.[40]

Differences between good field and staff officers? The discussion of differences in commanders' personal qualities also raises the question of whether there is a difference between good field officers and good staff officers, and, by extension, commanders and others. Beaumont gives the example from the First World War of selecting higher commanders and staff officers based on their performance as lower level unit commanders. The British Army called it "fighting commanders' syndrome" when those deemed effective leaders in small unit combat failed when promoted to higher level command or staff positions.[41] This raises some questions: Are there personalities more suited to be higher versus lower level commanders? Are there personalities better suited for staff versus line jobs? If these questions are answered in the affirmative, should we select, train, educate, and employ officers only in those areas where they are well-matched temperamentally?

---

[36] Rousseau, "Commanders, Complexity and the Limits of Modern Battlespace Visualization," paper written for AMSC 5, Oct 2002, 14. Available at http://wps.cfc.forces.gc.ca/papers/amsc5/index.html.

[37] Attributed to General Kurt von Hammerstein Equord circa 1933. This quote is cited in Peter G. Tsouras, *Warrior's Words a Quotation Book: From Sesostris III to Schwarzkopf 1871 BC to AD 1991* (London: Arms and Armour Press,1992), 297. I am grateful to Col Christian Rousseau, AMSC 5, for drawing this quotation to my attention.

[38] See Allan English, "Understanding Military Culture," 59-63 for a discussion of this issue.

[39] For example, in 1939, one month after the start of the Second World War, Sir Charles Portal, C-in-C of Bomber Command at the time, fired a number of his squadron and station commanders whose ability to command based on their peacetime experience he described as "utterly useless." Allan D. English, *The Cream of the Crop: Canadian Aircrew 1939-1945* (Montreal and Kingston: McGill-Queen's Univ. Press, 1996), 96.

[40] Rousseau, "Commanders, Complexity and the Limits of Modern Battlespace Visualization,"17.

[41] Roger Beaumont, *The Nerves of War* (Washington, DC: AFCEA International Press, 1986), 12-13.

Commander's Influence. Whatever the abilities of a particular commander might be, historical studies have shown that the influence of any commander is rarely as direct as most people would like or even believe it to be. Van Creveld's examples, ranging from Moltke's inability to exert his influence directly at Koniggratz in 1866 through to the inability of American commanders in Vietnam to influence the course of events effectively due to their incredibly complex C2 system, are examples of this phenomenon.[42] Similarly, in the Gulf War Mandeles found that some American commanders were no more able to influence events than Napoleonic era commanders.[43] A surfeit of information in recent campaigns such as Operation Allied Force has likewise interfered with operational commanders' ability to influence events. In that operation, according to analyst Timothy Thomas, "Information superiority allowed NATO to know almost everything about the battlefield, but NATO analysts didn't always understand everything they thought they knew." Therefore, he asserts that the most interesting and underrated lesson learned from the Kosovo campaign is that "information superiority overload can actually hurt mission performance" and reduce commanders' ability to follow clearly let alone influence the conduct of the campaign.[44]

Importance of Stability. One way a commander can cope with huge volumes of information is by using a competent and trusted staff to filter it. But this capability is often difficult to attain in modern armed forces because personnel change jobs frequently, often just as they are getting to be proficient at them. With the typical posting for senior officers in the two to three year range, there is a lack of stability and expertise in various military organizations. Another by-product of frequent staff changes is that commanders and senior staff officers have to make their mark quickly in order to be noticed and get promoted. This has led to a culture of zero tolerance for mistakes in some military cultures. Yet van Creveld tells us that one of the strengths of the Prussian military system, especially its General Staff, was that staff officers spent much of their careers (with occasional field tours) in a single institution. General Staff officers got to know each other well, and junior officers had "no mortal fear" of committing career killing mistakes. In fact, mistakes were seen as the first prerequisite for learning. This system, according to van Creveld gave the Prussians, and later the German Army, great flexibility and an extraordinary ability to recover from defeats.[45]

For the purposes of this discussion, it is useful to note these same general principles apply in the naval case to admiralty (general staff) and sea command (field).

---

[42] Martin van Creveld, *Command in War* (Cambridge, MA: Harvard University Press, 1985), 140, 258-60.

[43] Mark D. Mandeles et al., *Managing "Command and Control" in the Persian Gulf War* (Westport, CT: Praeger, 1996), 154.

[44] Timothy L. Thomas, "Kosovo and the Current Myth of Information Superiority," *Parameters* 30, no. 1 (Spring 2000), 14.

[45] van Creveld, *Command in War*, 143.

Technology and Command

Many in Western militaries have championed technology as the most critical part of the environment-technology-culture triad's influence on command. Often "command" has been characterized almost entirely in terms of the technology acquired for command and control. This part of the paper examines some of issues that arise when the environment and culture elements of the triad are not adequately accounted for.

The Relationship Between Technology and Command. One of the most controversial topics in the command and control debate today is the relationship between technology and the exercise of command. As Moltke observed over 100 years ago, it is important to recognize the limitations of technology and take them into account when exercising command. Van Creveld has expanded on this idea and contends that "Instead of confining one's actions to what available technology can do, the point of the exercise is precisely to understand what it cannot do, and then proceed to do it nevertheless."[46] But as Robert Polk noted, this point is often lost on the "C4ISR" crowd who believe that technology can tame uncertainty and that the future of war lies more in the art of mastering the science of well-laid plans than in fighting an opponent.[47]

This excerpt from a recent analysis of C2 by an NDHQ staff summarizes the issues nicely: "We want our leaders and their subordinates to be enabled by appropriate information technologies and architecture in order to develop the situational awareness essential for mission success. However, confident battlespace awareness will only result from the appropriate fusion of technology, organization, doctrine and personnel. There is no point in generating more information about the battlespace if: a) the doctrine is not well enough developed to assist in managing the information; b) the technology cannot rapidly and securely transfer vast amounts of data over long distances; c) the organization is so layered and compartmentalized that the right information never reaches the right people in time; and d) operators are unable to derive action-relevant knowledge from the information displayed to them."[48]

A recent analysis of the ongoing Afghanistan campaign concludes that US joint doctrine, particularly with respect to C2, is sound but that "a potentially fatal flaw" is that "it is poorly applied or is not applied at all." Vego argues that both the conflicts in Kosovo and Afghanistan have reinforced the trend towards further centralization in American C2 rather than promote the decentralized command doctrine he believes to be more effective.[49] However, Vego's article exposes a significant conceptual weakness in American C2 doctrine. He refers to "centralized direction and decentralized execution" as one of the principal tenets of American C2. The US Air Force, however, claims that "centralized control and decentralized execution" is its guiding principle to effective C2, and yet many land forces translate *auftragstaktik* as mission command and advocate devolving command decisions to the lowest practical level.[50] All this suggests that, as stated at the beginning of this paper, there is still considerable conceptual confusion in the C2 debate and this contributes to the muddle when considering the role of technology in C2. A useful starting point, but one rarely considered by the technophiles who design systems to maximize technical possibilities (like bandwidth and resolution), would be to begin the design of any new C2 system with an explicit statement of what the commander requires from the system. These requirements will, of course, vary according to the commander's role and it would seem will vary according to a commander's personal qualities and preferences. This puts new meaning into van Creveld's observation that there is no such thing as a "one size fits all" C2 system. [51]

---

[46] van Creveld, *Command in War*, 146, 275.

[47] Robert B. Polk, "A Critique of the Boyd Theory - is it relevant to the Army?" *Defense Analysis* 16, no. 3 (Dec 2000), 272.

[48] "Vectors 2020," unpublished paper produced by an NDHQ staff, 14-15.

[49] Milan N. Vego, "What can we learn from Enduring Freedom?" *US Naval Institute Proceedings* 128, no. 7 (Jul 2002), 28-33. See also Thomas E. Ricks, "Un-Central Command Criticized," *Washington Post* (3 Jun 2002), p. A01, for a USMC critique of the command structure used in the war in Afghanistan.

Network-Centric Warfare. Network-Centric Warfare (NCW)[52] is a key concept behind future American C2 frameworks, and aspects of it have been tested in exercises like Millennium Challenge 2002. NCW was originally developed by the US Navy, but the concept has now been endorsed by the US Joint Chiefs of Staff as a way to implement Joint Vision 2020. There is still some confusion as to what the concept actually entails, but it appears to advocate a fully integrated information network with all platforms being nodes in the network. The aim is to produce a "common operating picture" so that all players will be working from the same computer-mediated visual presentation.[53] The potential of NCW is huge: commanders having access to all the information that could affect their missions is the condition all militaries have strived to achieve. With the holy grail of "full situational awareness" so close to hand, many advocates see the developing technology as a panacea, without recognizing the extent to which it challenges traditional notions of command and control. Although primarily an issue that will be settled by the US armed services, the implications for America's coalition partners are huge. The Australian Defence Forces (ADF) are in many ways comparable to the Canadian Forces. The following discussion from the Sea Power Centre of Royal Australian Navy (RAN), although made in the narrower context of undersea warfare (USW), neatly summarizes the scope of the issue:

> [A] variety of [network-enabled] technologies promise to advance the sophistication of USW, offering the hope that increased mission effectiveness will derive from a combination of improved sensors, multiple platforms, and efficient, rapid data exchange and fusion. But there are profound difficulties in the practical application of both the technology and the doctrine. The larger debate about the nature and value of NCW is far from settled, and the debate about how to apply and manage it in the underwater battlespace is even less mature. ADF doctrine acknowledges the as yet unformed nature of NCW and the risks inherent in trying to incorporate it into Australia's future warfighting concepts. What is clear is that we have not yet

---

[50] Allan English, "Rethinking 'Centralized Command and Decentralized Execution,'" in Douglas L. Erlandson and Allan English, eds., *Air Force Command and* Control (Toronto: Canadian Forces College, Air Symposium 2002, 2002), 71-81.

[51] van Creveld, *Command in War*, 9, 262-3.

[52] The terms Network-Enabled Warfare and Network-Enabled Operations are now gaining currency in the literature and are being used synonymously with Network-Centric Warfare by some. For purposes of consistency, this report will use the term Network-Centric Warfare.

[53] Bill Gregory, "From Stovepipes to Grids," *Armed Forces Journal International* 136, no. 6 (Jan 1999), 18.

> witnessed the genesis of either a concept or a technology that will make the oceans transparent. It also seems likely that rather than a revolution, NCW operations will ultimately be seen as another step in the leap-frogging process USW has followed since World War I. Certainly, there is nothing to suggest that the next two decades will witness other than a continuation of this process.[54]

The problem with NCW seems to be one of learning to filter the flow of all that information so that it reaches commanders at a manageable rate. It is easy to perceive many of these problems as limitations of current technology, but it is important also to acknowledge that there is a limit to what the human mind can process. Indeed, that points to the essence of this study; however, as the whole realm of NCW is vast and beyond the scope of this paper, only some of the problems related to the human dimensions of command and NCW are summarized here.

Thomas Barnett, a Professor and Senior Decision Researcher at the US Naval War College, offers a number of criticisms of NCW, but he is particularly critical of the strain the common operating picture could put on commanders at all levels. It may push too many commanders, fed by an almost unlimited data flow, into being control freaks making the common operating picture into a sort of non-stop internal spin control by commanders trying to influence what others see. It also risks becoming a command-manipulated virtual reality, at worst degenerating into the senior command staff engaging in a heavy-handed enforcement of the commander's view of the situation all in the name of shaping and protecting the common operating picture. In any event, the developers of NCW may have fallen into the technology trap of providing information for information's sake, without considering the real needs of commanders.[55]

William Lescher, who reminds us that in large organizations the pace of innovation is constrained more by organizational culture than by technology, offers another caution. He argues that unless the US military gets past its fascination with technology to address critical issues such as a zero-defects mentality, risk aversion, poorly designed war fighting experiments, and widespread contentment with current performance, expectations for NCW will not be realized.[56]

More recent criticism of NCW has addressed its conceptual origins. Kagan argues that the underlying flaw in NCW is that it reflects an effort to translate a business concept of the 1990s into military practice. The basis of NCW is drawn explicitly from the examples of companies like Cisco Systems, Charles Schwab, Amazon.com, American Airlines and Dell Computers among others. It has been claimed that all of these companies attained dramatic competitive advantages in their fields by creating vast and complex information networks, and using these networks to predict inventory needed to meet customer orders permitted them to become "maximally adaptable," building products to the exact specifications of each customer only when the customer wanted them. This information technology allowed these companies to make enormous efficiencies because they could make accurate predictions, minimize risk and adapt to rapidly changing circumstances. The key to NCW, according to its advocates, is to achieve information dominance over the enemy in much the same way that successful corporations use information to dominate their markets.[57] However, recent experience and reading history should remind us that war is not business; enemies are not customers to be serviced; and the type of information dominance this approach to war demands is unlikely to be achieved with enemies who are adaptable and able to foil attempts to gather intelligence, especially using technical means.

---

[54] "Network Centric USW – Exploring the Realities," *Semaphore: Newsletter of the Sea Power Centre, Australia*, Issue 12 (November 2004).

[55] Thomas P.M. Barnett, "The Seven Deadly Sins of Network-Centric Warfare, *US Naval Institute Proceedings* 125, no. 1 ((January 1999), 38-9.

[56] William K. Lescher, "Network-centric: Is it worth the risk?" *US Naval Institute Proceedings* 125, no. 7 (July 1999), 60, 62-3.

Another problem with NCW, according to Kolenda, is the assumption that fusing information into a common operating picture will result in uniform interpretation of the information by its various users. He argues that shared situational awareness does not inevitably lead to "shared appreciation on how to act on the information" as different people, based on their experience, education, culture, and personalities will assess risk and how to best "maximize the effectiveness of themselves and their organizations" differently. Kolenda concludes that technology-based common operating pictures can be used to keep the creative abilities of subordinates within the framework of a commander's intent; however, these subordinates must be given the authority and autonomy they need to create, within the commander's intent, original solutions to the problems at hand. Therefore, to ensure success information technology should "result in empowerment and initiative rather than rigidity and overmanagement."[58]

One of the best recent analyses of the relationship between NCW and naval command accountability was written by retired USN Captain Chris Johnson, formerly the director of the Prospective Commanding Officer/Prospective Executive Officer course at the USN's Surface Warfare Officer School. His key ideas are summarized to put NCW in a naval context.

Johnson starts his analysis by reminding us that in the navies of previous centuries commanding officers at sea were charged with making decisions independently because there was little real time direction from senior officers ashore. He states that: "this empowerment to act alone was a unique feature of naval service, a point of pride that distinguished us as different – perhaps even more capable and responsible – than our sister services." Yet with this independence and trust came "an all-encompassing code of accountability" for how and why command authority was used.[59] Quoting former USN Chief of Naval Operations Admiral Vern Clark, Johnson notes that, " 'Accountability does not equal figuring out who to punish when something bad happens. It does mean holding our people – and particularly our commanders and those with the most responsibility - to account for their actions.' "[60] "The core of accountability," according to Johnson, is the premise that because they are given "the authority and the resources to achieve their missions and preserve the safety of their commands" commanders can be held accountable. However, as communications have improved, especially from the last decade of the 20th century onwards, the ability of commanding officers to control their "command's destiny" has gradually and almost imperceptibly been eroded.[61]

---

[57] Frederick W. Kagan, "War and Aftermath," *Policy Review* 120 (Jul-Aug 2003), 6.

[58] Christopher D. Kolenda, "Transforming How We Fight: A Conceptual Approach," *Naval War College Review* 56, no. 2 (Spring 2003), 103, citation from 114.

[59] Chris Johnson, "Net-centric Fogs Accountability," *Proceedings* 129, no. 5 (May 2003), 32.

[60] Johnson, "Net-centric Fogs Accountability," 35.

Now "an almost unfathomable cast of people," who Johnson calls "peripheral actors," can influence the ability of commanding officers at sea to achieve their missions. NCW has caused "control of a ship's destiny" to migrate in two directions 1) to the periphery of the network, and 2) up the chain of command, Johnson argues. These effects of NCW are a result of deliberate USN policies, and, therefore are the way of the future:

> The issue, then, is not whether net-centricity is good but how the Navy will hold people on the periphery accountable, side by side with the commanding officer and his crew, for their impact on the success or failure of the ship.[62]

The implementation of "net-centric accountability" is vital if the USN is to remain an organization "founded on principles of justice and merit." Therefore, the navy must develop ways to track accountability throughout the network to maintain the confidence of its officer corps in the fairness of the system, Johnson argues. Since the USN's command system is based on the principle that accountability is balanced with authority, if authority is being dispersed by NCW, then so must accountability. Tracking accountability also has the purpose of "institutionalizing self-learning" in the new NCW navy, for a learning organization must be able to receive accurate inputs for effective learning to occur.

Johnson also addresses the migration of control up the chain of command through new technologies that permit instantaneous communications between commanders ashore and ships at sea. While he acknowledges that, for good reason, in the past the USN has been unwilling to hold senior officers publicly accountable for every action that happens under their command, if through NCW they become directly involved in command decisions, then they must also share some of the accountability.[63]

Four suggestions are offered by Johnson for the USN to adapt its command system to the NCW environment: 1) acknowledge that the nature and breadth of accountability has fundamentally changed and hold all persons and even systems, not just senior officers, accountable for their actions; 2) resolve that accountability must be tracked to every node in the system; 3) develop ways to track accountability so that the "where, when and who associated with key decisions" is known; and 4) develop a new accountability paradigm that is relevant to the NCW environment.[64]

---

[61] Johnson, "Net-centric Fogs Accountability," 32.

[62] Johnson, "Net-centric Fogs Accountability," 33.

[63] The general subject of accountability, as it applies to the Canadian Forces, has been a very important issue particularly as a result of several incidents in the 1990s. The concept of accountability requires that responsibilities be clearly stated and appropriately promulgated to ensure that they will be fulfilled. Also, these actions ensure that in the event an individual fails to the fulfil his or her responsibilities, he or she can be held to account. In September of 1999 the second edition of "Organization and Accountability – Guidance for Members of the Canadian Forces and Employees of the Department of National Defence" was published under the authority of the Chief of the Defence Staff and the Deputy Minister of the Department. It is available at http://www.forces.gc.ca/site/minister/eng/authority/OA_e.htm.

[64] Johnson, "Net-centric Fogs Accountability," 34-5.

This discussion of technology and command points to the great debate as to whether concepts like NCW will work effectively or not. To a large extent that will depend upon organizational culture as much as technology. However, because NCW originated as a concept within the USN, and its development has been followed closely by the Canadian Navy, the issue is especially important to this study.

Organizational Culture

Culture has been described as the "bedrock of military effectiveness" because it is the foundation for everything a military does and it has a direct effect on how well its C2 works.[65] For example, the ethical and religious (Lutheranism) precepts of Prussian society were the bedrock upon which Moltke's General Staff was built. Van Creveld argues that those who look for the success of the Prussian General Staff only in organization, procedures and technology will miss some of its other essential elements.[66] Furthermore, as Johnston has argued, how armed services fight may be determined more by their culture than their doctrine.[67] Yet the influence of the culture element of the environment-technology-culture triad on command is often overlooked. This part of the paper discusses some key elements of culture as it relates to command.

Culture varies not just among nations, but also among armies, navies, and air forces, based on the differing environments in which they operate. This also has implications for command and leadership in joint operations when leaders from one service are placed in command of leaders in other services. This is an area where there is very little research, but which has important implications for command at the operational level.[68]

Culture, described as the "bedrock of military effectiveness,"[69] is a key to understanding command because it can be used to help explain the "motivations, aspirations, norms and rules of conduct," what might be called the essence of the Canadian, or any other, military. The concept of culture also allows us to understand how new technologies may influence and in turn be influenced by military culture in the future. This is a crucial issue because we know that how armed forces fight may be "more a function of their culture than their doctrine," or their technology for that matter.[70] History has shown that even when military forces have had access to the same technology, whether they developed the doctrine to use that technology effectively or not was largely a function of the cultures of those forces.[71] As Paul Johnston put it, "formal doctrine is only one part of a military's character; so too are the experience and value systems of a military force's leaders; in fact, since armies choose doctrines, doctrines may be more a reflection of an organizational culture than a factor effecting change in the organizational culture."[72]

---

[65] Walter F. Ulmer, Jr. et al., *American Military Culture in the Twenty-First Century* (Washington, DC: CSIS Press, 2000), xv.

[66] van Creveld, *Command in War*, 149.

[67] Paul Johnston, "Doctrine is not Enough: The Effect of Doctrine on the Behavior of Armies," *Parameters* 30, no. 3 (Autumn 2000), 35.

[68] For some preliminary work in this area see Allan English, "The Masks of Command: Leadership Differences in the Canadian Army, Navy and Air Force," paper presented at the Inter-University Seminar on Armed Forces and Society conference 25-27 October 2002, Kingston, ON.

[69] Ulmer, et al., *American Military Culture in the Twenty-First Century*, xv.

[70] Johnston, "Doctrine is not Enough," 30.

[71] James S. Corum, "A Clash of Military Cultures: German and French Approaches to Technology between the World Wars," Joint Chiefs of Staff Joint Doctrine Website, http://www.dtic.mil/doctrine/jel/research_pubs.htm.

Levels of Command. A key aspect of organizational culture related to command is the use of land-centric concepts of levels of conflict and command, for example in *Leadership in the CF* (see Figure 1 above) that do not necessarily correspond with naval command realities.

One challenge to land-centric joint doctrine, articulated by Rear Admiral J.C. Wylie, attributes differences in the way war is perceived by the army, navy, and air force to the different environments in which these services fight. This, he claims, leads to fundamentally different ways of conceptualizing how war might be fought in dissimilar environments:

> Where the sailor and the airman are almost forced by the nature of the sea and the air, to think in terms of a total world or, at the least to look outside the physical limits of their immediate concerns, the soldier is almost literally hemmed in by his terrain.
>
> From this fact of terrain as a limiting element has come the concept of 'theatre' in the soldier's strategy, a terrain division somehow arbitrary to the sailor or the airman but sound and logical if we move to the soldier's headquarters.[73]

Wylie presents the naval challenge to the concept of the operational art with this argument: "The operational art is an artifice appropriate to ground force doctrine but the navy (and the air force) have no need for such a concept." In fact navies have generally avoided the term "operational" preferring the term "doctrine" instead to indicate what lies between maritime strategy and tactics.[74]

Hughes puts it somewhat differently, arguing that the "three prongs of the naval trident have long been called strategy, logistics and tactics."[75] Specific definitions aside, navies have traditionally seen doctrine in a different light than armies. Grant notes that for 200 years the US Navy has kept doctrine at arm's length for fear that a binding set of principles might restrict the initiative and independence of the captain at sea - the very foundation of naval combat.[76] Therefore, strategy and tactics were where naval officers concentrated their attention, and until recently, the bulk of US Navy doctrine was "found in the unwritten shared experiences of its officers."[77] But Desert Storm's joint-force air attack procedures jolted the US Navy out of its complacency, and it established a Naval Doctrine Command in 1993 in part to provide the doctrinal basis for its statement of maritime strategy. According to Tritten,

---

[72] Johnston, "Doctrine is not Enough," 35.

[73] Wylie cited in Wayne P. Hughes, "Naval Maneuver Warfare," *Naval War College Review* 50, no. 3 (Summer 1997), p. 12 of 19 (internet version).

[74] Robert H. Thomas and Richard Gimblett summarize more of the naval approach to these issues in their bibliography, "AMSC Bibliography: Maritime Doctrine at the Operational Level of War," which is available on IRC website at http://wps.cfc.dnd.ca/bib/bibmaritime.html.

[75] Hughes, "Naval Maneuver Warfare," 13 of 19.

[76] Rebecca Grant, "Closing the Doctrine Gap," *Air Force Magazine* 80, no. 1 (January 1997), 48-52.

[77] James J. Tritten, "Naval Doctrine…From the Sea," (Norfolk, VA: Naval Doctrine Command, December, 1994), 1-2.

"With the formation of the Naval Doctrine Command (NDC), the Navy now has its first centralized command responsible for the publication of doctrine for the fleet." But even with the formation of NDC, basic US Navy doctrine is dated, compared to US Army and Air Force doctrine as the most recent version of NDP 1 Naval Warfare was published 28 March 1994.[78] The naval approach to doctrine reflects its view of warfare at sea. Navies produce much less written doctrine than armies because of their view of doctrine as "a common cultural perspective of how the naval Services think about war...and how they will act during time of war...[therefore] Navy doctrine is the art of the admiral."[79]

The Canadian Navy's *Leadmark: The Navy's Strategy for 2020* also noted the general distinctions amongst sea, land and air styles of warfare (it follows with a more detailed examination of "the naval advantage" and unique Canadian factors):

> Clearly, there is some inter-relation amongst these three basic roles which offers a degree of synergy not typically found in the other services. In the final analysis, while naval platforms and their crews are designed and trained for war-fighting at sea and in the littorals, they have many wider applications. Navies cannot hold ground to the extent that an army can. Nor can they reach as swiftly to the far corners of the globe as an air force. But the ability of a navy to stand off a foreign shore for an indefinite period with substantial combat capability cannot be matched. Any joint expeditionary concept of operations developed for the Canadian Forces must be undertaken in recognition of the unique attributes offered by each of the services.[80]

Organizational Structure

The paradox of modern military command at the theatre level is that although it is the responsibility of one officer, it must be exercised within a set of complex organizations.[81] Therefore, two important factors in the exercise of operational level command are organizational structure and organizational culture.

A primary purpose of military organizations is to exercise control over large forces. Recall that Pigeau and McCann define control as " those structures and processes devised by command to enable it and to manage risk." They see structures as those things that "reduce uncertainty by bounding the problem space and increasing order (or meaningfulness)." For them military control involves a number of structures for reducing uncertainty, e.g., SOPs, rules of engagement, doctrine, sensor and weapon systems. They go on to note that: "All control structures and processes, especially in organizations as large and as complex as militaries, have their strengths and their weaknesses, depending on the situation in which they are applied." Pigeau and McCann stress that all "control structures and processes are human inventions, either directly or indirectly." Everything from weapons to doctrine to plans are created by people and "are possible only because of human creativity...but the importance of creativity does not end there. Inevitably these structures and processes must be changed, adapted, altered, interpreted and, sometimes, even re-invented to suit the evolving needs of the military situation."[82]

---

[78] See the US Joint Electronic Library,
http://www.dtic.mil/doctrine/service_publications_navy_pubs.htm.

[79] Tritten, "From the Sea...," 7, 14.

[80] *Leadmark: The Navy's Strategy for 2020*, "The Roles of Navies," (Ottawa: Chief of the Maritime Staff, 2001) 31-33, and especially Part 6, 100-117, "Principles of a Canadian Naval Strategy"; also at: http://www.navy.dnd.ca/leadmark/doc/part3_e.asp#sub2.

[81] Mandeles et al., *Managing "Command and Control" in the Persian Gulf War*, 6.

A leading advocate of new ways of changing the structures and processes used to control military forces, Douglas MacGregor, has summarized some of his groundbreaking ideas on organizational structure in his book *Breaking the Phalanx* and in the essay that is cited here. MacGregor notes that in the 10 years after Desert Storm there has been no real change in the concepts, doctrine and structure of the C2 of the US Army. He characterizes it as having too many echelons, having a decision-making capability that is too slow, and being too expensive to modernize. The US Army should adopt a new horizontal operational architecture organization around information flows that are lateral and cross service lines, like the Israeli Defense Forces (IDF), according to MacGregor. Only then will its C2 structures be able to cope with the continuous and fluid nature of operations with the geographically dispersed forces found in the information age. He goes on to argue that the effectiveness of joint campaigns will depend not only on technological congruence among services, but also an intellectually shared battlespace.[83] As we have seen, both of these prerequisites to effectiveness have been impeded by bureaucratic infighting abetted by discordant service cultures.

Another prerequisite to successful joint campaigns and a product of both organizational structure and culture in Western militaries today is the operational planning process (OPP) and how it is used. Rousseau suggests that the methodology adopted in the Canadian OPP has its advantages and disadvantages. The doctrinally approved method whereby the commander limits the number of courses of action (COAs) to be developed by the staff through Commander's Planning Guidance takes advantage of what should be the highly developed pattern-recognition skills of the most experienced member of the team. But in reality commanders may be intimidated by the credentials of some members of their planning team, and may permit them to devise COAs. If these commanders realize that the COAs developed by their staff do not meet their understanding of the situation, they may incrementally adjust them during the information and decision briefs.[84] Rousseau hypothesizes that this process "may be a reflection of the teaching method in our Staff Colleges where Directing Staff, acting as commanders, ask their student planners to come up with the commander's planning guidance, ostensibly to give them a better opportunity to read in the problem. It is clear that delegating mission analysis and COA identification to the staff is the wrong approach, not only does it waste the time and cognitive energy of the staff, it marginalizes the expertise of the commander who ultimately makes the decision." The deliberate planning methodology that characterizes our staff colleges, Rousseau argues, has to be counterbalanced by the incorporation in the curriculum of decision-making methods that take advantage of intuition and experience to make rapid, less than perfect COAs. While the OPP is useful in unfamiliar complex situations, it is slow, cumbersome, and rarely used in real life. Rousseau concludes that: "It is not enough to learn to plan. Learning to make time-sensitive decisions during execution must be taught and practised if our military education institutions are to be worthy of the title 'Command' and Staff Colleges."[85] Mandeles puts it this way: "In war a commander needs a set of organizations that will learn while they execute their missions." In peacetime the organizations need to practice "not so much precisely *what to do* in war, but *how to learn* quickly what to do in war." This emphasizes the point that staffs must be trained not just how to follow detailed procedures mechanically, but that they also must be flexible, creative, and able to improvise under stress.[86]

---

[82] Pigeau and McCann, "Re-conceptualizing Command and Control," 54-5.

[83] MacGregor, Douglas A. "Joint Operational Architecture: The Key to Transformation." *Strategic Review* 28, no. 4 (Fall 2000), 27-36.

[84] Rousseau, "Commanders, Complexity and the Limits of Modern Battlespace Visualization," note 21, p. 25, cites the example of General Schwarzkopf's first version of the plan for a ground attack in the Gulf as a typical example. His instruction to his planners was "Assume a ground attack will follow an air campaign. I want you to study the enemy dispositions and the terrain and tell me the best way to drive Iraq out of Kuwait given the forces we have available." He devised his own COA later. Cited by Rousseau as Norman H. Schwarzkopf, *It Doesn't Take a Hero* (New York: Bantam Books, 1992), 354 and 362.

This issue has sparked some lively debates in the American military recently. Almost all would agree that gaming and simulation have many positive outcomes, such as training new staffs on standing plans, gaming new plans for deficiencies, teaching a planning system, teaching other operational procedures, testing doctrine, and testing new technologies for their projected effect on doctrine and operational procedures.
However, Michael Schrage, a senior adviser at the MIT Security Studies Program, has argued that the Millennium Challenge 2002 war game event is an example of some problems with current war game practices, and that this event "embodied practically every institutional pathology infecting the bureaucracy of command" in the US military, because too many people were competing with each other to test too many doctrines and conduct too many experiments. In supporting retired USMC General Paul Van Riper's use of unorthodox enemy tactics during Millennium Challenge 2002, Schrage asserted that, "The purpose of gaming and simulation isn't to give warriors better plans, it's to give warriors better insights into what to do after those plans evaporate."[87]

Organizational Procedures – *ad hocery*. Schrage's argument is supported by Beaumont's historical analysis that tells us that at least as early as Konnigratz in 1866, and certainly at the time of the First World War, many command and staff techniques and practices were shaped by momentum, custom, word-of-mouth, adaptive informal practice and the whims of commanders and staffs. In fact the process often functioned only by ignoring rules or short circuiting systems.[88] This "*ad hocery*" was still present as late as the Gulf War with the creation of "the Black Hole" air planning staff.[89] Canadian examples abound, with Operation Bandit (for possible intervention in Haiti in 1988[90]) and the mid-1990s contingency Plan

---

[85] Rousseau, "Commanders, Complexity and the Limits of Modern Battlespace Visualization," 10, 18, 21.
[86] Mandeles et al., *Managing "Command and Control" in the Persian Gulf War*, 6.
[87] Michael Schrage, "Military Overkill Defeats Virtual War and Real-World Soldiers Are the Losers," *Washington Post* (22 September 2002), p. B05.
[88] Beaumont, *The Nerves of War*, 12-13.
[89] Mandeles et al., *Managing "Command and Control" in the Persian Gulf War*, 9-42.
[90] See Sean Maloney, "Maple Leaf over the Caribbean: Gunboat Diplomacy Canadian Style?" in Ann L. Griffiths, Peter T. Haydon and Richard H. Gimblett, eds., *Canadian Gunboat Diplomacy: The Canadian Navy and Foreign Policy* (Halifax, NS: Dalhousie University Centre for Foreign Policy Studies, 2001), 166-71.

Cobra for evacuation of allied forces from the Former Yugoslavia are two of the most recent; they are especially interesting since each included a significant naval dimension.

"The Directed Telescope." Among ad hoc command procedures, the use of the "directed telescope" by commanders to bypass the chain of command to home in on key issues has been very effective in the past. The "directed telescope," defined as the selective and careful use of trusted and attuned subordinates to act as the commander's eyes and ears, to observe and report directly to the commander, is especially useful for determining such things as morale. Van Creveld supplies examples of successful use of the "directed telescope" by Napoleon, Moltke, the German Army in the First World War, and Montgomery and Patton in the Second World War. He claims the lack of it led to the failure of Haig on the Somme in 1916, the IDF in the Yom Kippur War and the US in Vietnam. However, as Czerwinski points out, it is not even found as an option in current doctrine.[91]

Summary

Historically, the exercise of command has been problematic for many reasons. Foremost among these is the lack of a valid theory to guide commanders. Another important concern is that for a long time technophiles have driven most of the research and acquisition of C2 systems that in turn have been seen as the most important part of the exercise of command. The relative neglect of the environment and culture elements of the environment-technology-culture triad has often skewed the study of command towards what Pigeau and McCann describe as the control aspects of C2, which has led to a number of serious problems in the past. Until the entire triad is studied as carefully as the technical systems that support commanders, we will not have a complete understanding of military command.

Among those personal qualities necessary for command at the operational level, creativity is often described as the most important. Pigeau and McCann have provided us with a more comprehensive list of command competencies, namely physical, intellectual, emotional, and interpersonal. Militaries are generally good at recognizing and selecting commanders on the basis of the first two, but less able to deal with the last two. In addition, resolution and determination to express their creative will are also necessary for commanders to be successful. Another important characteristic for commanders to possess is the ability to function comfortably in a chaotic and ambiguous environment. The issues of commanders' personal qualities raises the thorny question of whether some people are better suited to different roles in military organizations, such as high versus low level command, or staff versus line positions. If this is true, how do military organizations get the best high-level leaders when they are often selected for their positions based on performance in jobs unrelated to high command? How do armed forces handle the question of promoting someone, who like in the German adage cited above, has the qualities of a high commander but is not temperamentally suited to command at lower levels? And supposing that question could be solved, how would the candidate temperamentally suited to higher command gain sufficient experience to be most effective at that level? The fact that in wartime many leaders who earned their rank in peace were quickly found wanting, suggests that this is an area that would benefit from more inquiry.

---

[91] van Creveld, *Command in War*, 75, 115, 142, 147, 176 255-7; and Thomas J. Czerwinski, "Command and Control at the Crossroads," *Parameters* 26, no. 3 (Autumn 1996), 127.

There are many issues yet to be resolved before technology can be used to maximize the potential of the commander. As we have seen, if doctrine, organizational structure and organizational culture are not all considered in the design and acquisition of C2 technology, at best it will not be used effectively and at worst it could impair the commander's ability to exercise command effectively. These issues are just as relevant now as they were in Moltke's time. Mandeles' analysis of C2 in the Gulf War still rings true today: "Despite improvements in the administration of command and control, the problem of organizing information, knowledge, and understanding has not been solved. The great complexity of modern fighting forces only exacerbates organizational shortcomings."

Canadian experiences over the last decade or more show that these issues are as relevant for us today as they are for our allies or were for our forebears. There are some indications of progress towards solving these problems, but there is much to be done before they can be addressed in a meaningful way.

Section 2: The Canadian Military Context

The environment-technology-culture triad was introduced in the previous section as a way to understand differences in military command styles. This section of the paper examines how the Canadian military context evolved focussing on the elements of environment and culture, often the two most neglected elements of the triad. The first part of this section describes how history helped to shape Canadian military culture, the second part focuses on environmental influences on command and leadership styles in the Canadian military, and the third part specifically addresses some unique aspects of Canadian naval command based on both environment and culture.

Part 1 – Command And Canadian Military Culture[92]

The Roots of Canadian Military Culture. As we have seen, an armed service's culture has a major impact on its how it operates, and particularly on how it conceptualizes and carries out command and control. Therefore, understanding a service's culture is key to understanding its command style. A sizeable literature exists on the subject of military culture, but little has been written on Canadian military culture. What follows is a brief overview of the subject. For more detail, the cited works should be consulted.

The roots of Canadian military culture are to be found in the history of the Canadian Army, Canada's senior service, which reflects the unique political, geographic and demographic nature of the country that spawned it. Prior to Confederation, Canada had small colonial militias for defence, but this changed in 1861 with the start of the American Civil War and the threat of invasion by massive new American armies. The Canadian response was to rely on Britain for guarantees of protection while creating an army rooted in a citizen militia. Basing the defence of the nation on a part-time military force was a natural response at the time because most of Canadian society was contemptuous of full-time soldiers. Sir John A. Macdonald believed that regulars were useful only for hunting, drinking and chasing women and that they possessed no useful skills. They had taken up soldiering, he believed, because they were good at nothing else. In the late 19th and early 20th centuries, the growth of the Permanent Force (regular army) in Canada was hindered by this contemptuous attitude and the view that soldiering was not a particularly difficult skill to acquire. In contrast to the image of a dissolute regular force, the militia was deemed to consist of "hard-working farmers who were pure of motive and moral" who would fight with "great spirit and daring when the time came to defend home and hearth." For many Canadians, the South African War (1899-1902) was proof that citizen soldiers were superior to regulars in battle. Canadians, mostly "amateur" soldiers, distinguished themselves fighting overseas together in units commanded by Canadian officers, and an overt Canadian military culture began to manifest itself when patriotic songs and emblems like the maple leaf were used to distinguish them from other imperial units.[93] Widely reported in the press, the Canadian experience in South Africa, aided by the fact that militia commissions were used as a form of political patronage, ensured that the militia myth continued to dominate Canadian defence thinking until well into the 20th century. All this began to change in the Great War. The inefficiencies and incompetence that were part of the peacetime force could not be tolerated in war, and under fire during the First World War the Canadian Corps became a meritocracy. After the usual peacetime neglect during the interwar years, the Canadian Army in the Second World War once again had to weed out the incompetent under fire. But by 1945, Canadian commanders from battalion to divisional level were second to none among the Allies.[94] This wartime heritage was carried on in Korea where Canada's 25th Brigade was legitimized by wearing not only the "red patch" of the First Canadian Division in the First World War and the Second World War, but also the UN emblem which, according to the Ottawa Citizen in 1953, showed it "to have upheld its grand traditions and to have heralded 'a new concept of Canadian nationhood.'"[95]

---

[92] Most of this section of the paper is excerpted from Allan English, "Understanding Military Culture: A Canadian Perspective," DCIEM Contract Report CR 2001-047, 10 May 2001.

The Canadian experience in NATO also affected Canadians' perceptions of themselves. They were now seen to be part of an alliance defending the free world against the Soviet menace. The NATO experience also "changed the Canadian officer corps profoundly by professionalizing it," according to Bland. He contends that the militia myth finally died in the Cold War era because the problems of the NATO era were handled "mostly by keeping the professional force employed and out of politics, out of the press, out of sight, and out of the country." Senior military leaders, according to Bland, accepted this state of affairs because "it enhanced the roles professional officers wished to protect and gave them a significant degree of freedom from political oversight." However, he notes that the "end of the cold war also ended this happy coincidence of political and military interests."[96]

Another key influence on Canada's military culture, peacekeeping, began with the United Nations Emergency Force (UNEF) after the Suez crisis in 1956. Forty years later, 100,000 Canadian troops had participated in more than 30 peacekeeping (both UN and non-UN) operations. Despite widespread public support for peacekeeping,[97] at first neither the Canadian government nor the military was enthusiastic about it. The military in particular saw peacekeeping as a diversion from "the big show" in Germany with NATO and a drain on scarce resources. This prompted the view in the CF that only soldiers trained for war could be good peacekeepers. Nevertheless, peacekeeping became so integral to the Canadian Army in the public mind that Canadians tended to forget that armies exist to fight wars.[98] While, in terms of numbers, the army has shouldered the biggest peacekeeping burden, the navy has participated in UN missions off the coasts of Somalia, the former Yugoslavia, and Haiti.[99] The little known story of air force support to the UN started in the 1950s. Between 1950 and 1954, during the Korean conflict, 12 North Stars of 426 Squadron carried out 599 missions to the Pacific theatre. The next large airlift was in support of UNEF, and air force support to many UN missions continues to this day.[100]

---

[93] Carmen Miller, *Painting the Map Red: Canada and the South African War 1899-1902* (Montreal and Kingston: McGill-Queen's Univ. Press, 1993), xi, xiv, 366, 437-40; and Miller, "Canadians and the South African War," presentation given at the Canadian War Museum, Ottawa, 18 November 1999.

[94] David Bercuson, *Significant Incident: Canada's Army, the Airborne, and the Murder in Somalia* (Toronto: McClelland and Stewart, 1996), 43-5.

[95] Michael L. Hadley, "The Popular Image of the Canadian Navy," in Michael L. Hadley, et al., eds., *A Nation's Navy: In Quest of Canadian Naval Identity* (Montreal and Kingston: McGill-Queen's Univ. Press, 1996), 51.

[96] Douglas Bland, "Canada's Officer Corps: New Times, New Ideas," paper presented at Conference of Defence Associations Institute XVth Annual Seminar, 1999 - The Profession of Arms in Canada: Past. Present and Future, http://www.cda-acd.forces.gc.ca/cfli/engraph/research/pdf/21.pdf, np.

[97] In 1943, 73 percent of Canadians supported a postwar peacekeeping force even if it meant Canadian servicemen might be killed serving in it. Cited in Alex Morrison and Suzanne M. Plain, "The Canadian UN Policy: An Historical Assessment," in Hans-Georg Ehrart and David G. Haglund, eds., *The "New Peacekeeping" and European Security* (Baden-Baden: Nomos Veragsgesellschaft, 1993), 167. Twenty years later 75 percent of Canadians supported Canadian participation in UN peacekeeping forces. Cited in John Paul and Jerome Lauglicht, *In Your Opinion: Leaders' and Voters' Attitudes on Defence and Disarmament* (Clarkson, ON: Canadian Peace Research Institute, 1963), 16.

Army Culture. Until the late 1960s, the Canadian Army culture was largely a legacy of the two world wars. Its ethos was embodied in an army tried by fire and trained to fight in Europe as part of larger alliance. Its officers were part of the same Anglo-Saxon elite that dominated the rest of Canadian society, and its ranks were filled by men with little formal education and whose values reflected an older, more structured, less polyglot society. In what Bercuson calls the "old army" very few of the troops were married, and most men lived in barracks. They rarely left base and there was little interaction between military personnel and the larger society. For those soldiers who were married, there was little consideration for their families, and a soldier's life (both work and social) centred on his regiment. The make up of the "old army" was quite different from Canadian society in ethnic and social composition. Men of British heritage were over-represented, while francophones and other ethnic groups were under-represented. This was especially true of the officer corps where 73 percent were of British heritage versus 44 percent of Canadian society as a whole. The religious background of the officer corps also reflected this divergence from Canadian society as 80 percent of officers were Protestant, whereas 43 percent of the other ranks, more accurately reflecting the national balance, were Roman Catholic. There was also a geographic imbalance in the backgrounds of those in the "old army." Both Western and Atlantic Canada were over-represented, and Westerners were especially over-represented in the higher ranks comprising only 21.1 percent of the Canadian population but 31.5 percent of the "old army's" officers. The "old army" also came mainly from Canada's urban areas, but it was not particularly well educated: the median education for the ranks was less than 10 years and only 35 percent of its officers were university graduates compared with 57 percent in the US Army.[101]

After the Second World War, large-scale immigration changed the make up of Canadian society to the point where now some 30 percent of Canadians are of neither British nor French origins. In the late 1960s Canadian society entered one of the most dramatic periods of change in its history. According to Bercuson, postwar prosperity, immigration, education, upward mobility, and the feminist revolution changed Canada forever; therefore, it was inevitable and proper that the Canadian Army change with society.[102]

---

[98] David Bercuson, *Significant Incident: Canada's Army, the Airborne, and the Murder in Somalia* (Toronto: McClelland & Stewart, 1996), 58-60.

[99] James D. Kiras, "Maritime Command, National Missions, and Naval Identity," in Michael L. Hadley, et al., eds. *A Nation's Navy: In Quest of Canadian Naval Identity* (Montreal & Kingston: McGill-Queen's Univ. Press, 1996), 345.

[100] Bill March, "The RCAF and Peacekeeping,"in Office of Air Force Heritage and History, ed., *Proceedings: 6th Annual Air Force Historical Conference* (Winnipeg, MB: Air Force History and Heritage, 2000).

[101] Bercuson, *Significant Incident*, 61-2, 64-5.

Air Force Culture. The air force, unlike the navy, earned an enviable reputation in the First World War based on the exploits of fighter aces like Billy Bishop and Raymond Collishaw. They were among the 127 Canadian aces in the imperial flying services who accounted for a staggering 1,500 victories in that war.[103] In fact the top ten Canadian aces accounted for 462 enemy aircraft, a significant portion of the British Empire's total.[104] By accounting for this many kills, the Canadian fliers established a reputation for their country out of all proportion to the small number of them in the British air services. Yet Canada had no operational air force of its own overseas during the First World War, but served as a recruiting ground for the British flying services: the Royal Flying Corps (RFC), the Royal Naval Air Service, and, from 1918, the Royal Air Force (RAF). However, Canadians made a substantial contribution to the Royal Air Force, as by the end of the war about 25 percent of all RAF flying personnel and perhaps 40 percent of RAF pilots on the Western Front were Canadian.[105] Less well known than the exploits of its aces, is the fact that Canada was a world leader in aircrew training in the First World War. By sending 200 pilots per month to Britain, a Dominion with less than 10 per cent of the Empire's population[106] produced at least 20 percent of the aircrew reinforcement needs of the British Empire, and by November 1918, two-thirds of the staff and 70 percent of the flying positions of the RAF Canada were filled by Canadians.[107] Canadian expertise in aircrew training was also recognized by its closest neighbour. As late as April 1917 (the month the US entered the First World War), there were only 52 trained fliers in the Aviation Section of the US Army Signal Corps; by war's end there were over 16,000 flyers in the United States Army Air Corps.[108] The American expansion was given a running start by the RFC Canada when it gave briefings and instructional material to those in charge of starting a large scale American flying training program. Ten days after their visit to RFC Canada facilities, American officials began their own program using many of the methods and materials borrowed from Canada.[109] As the war drew to a close, two Canadian air services were created. At home, a small Royal Canadian Naval Air Service (only created in September 1918) conducted maritime patrols, and a two-squadron Canadian Air Force was established in England in the last few months of the war. But both disappeared with the coming of peace.

Between 1920 and 1924 the air force made the transition from "a small permanent military service" whose pilots gradually lost most of their military skills to a group of "bush pilots in uniform."[110] When the Royal Canadian Air Force (RCAF) came into existence on 1 April

---

[102] Bercuson, *Significant Incident*, 41,65, 67-8.

[103] Dan McCaffery, *Air Aces: The Lives and Times of Twelve Canadian Fighter Pilots* (Toronto: Lorimer, 1990), 1.

[104] Denis Winter, *The First of the Few* (Athens, GA: Univ. of Georgia Press, 1983), 22.

[105] S.F. Wise, *The Official History of the Royal Canadian Air Force. Vol.1: Canadian Airmen and the First World War* (Toronto: Univ. of Toronto Press, 1980), 597.

[106] Winter, *The First of the Few*, 21.

[107] Wise, *Canadian Airmen and the First World War,* 113, 117-8.

[108] Allan D. English, *The Cream of the Crop: Canadian Aircrew 1939-1945* (Montreal and Kingston: McGill-Queen's Univ. Press, 1996), 25.

[109] Hiram Bingham, *An Explorer in the Air Service* (New Haven: Yale Univ. Press, 1920), 11-22.

[110] W.A.B. Douglas, *The Official History of the Royal Canadian Air Force. Vol. 2: The Creation of a National Air Force* (Toronto: Univ. of Toronto Press, 1986), 65.

1924, it consisted of 66 officers and 194 other ranks, but it did not have the status of an independent military service, as its headquarters was a directorate within Militia Headquarters. The RCAF was involved mainly in what it called civil government air operations: exploration of the north, charting air routes for land and seaplanes and establishing bases for them, delivering the mail, and forestry patrols. All these tasks were looked upon with approval by a public that was not interested in spending money on defence. While the RCAF sent a small number of officers annually to Britain to take advanced courses with the RAF, unlike the navy, the small Canadian air force conducted most of its officer training at home. In 1938, with the approach of war, the air force finally won its independence from the army with the appointment of the first Chief of the Air Staff.

During the Second World War, the RCAF expanded to over 100 times its peacetime strength, from 1,150 all ranks in 1938 to a wartime peak of 206,350 all ranks at the end of 1943.[111] Once again Canada excelled in the aircrew training role as the Canadian-based portion of the British Commonwealth Air Training Plan furnished 44 percent of 340,000 Commonwealth aircrew trained between 1939-45.[112] Like its sister services, by fielding the fourth largest air force in the world, the RCAF made an important contribution to the Allied war effort.[113] More than the other two Canadian services, however, as a matter of government policy large numbers of Canadian airmen were sent to serve with British forces - of the almost 50,000 members of the RCAF who went overseas about 60 percent served with the RAF.[114]

Immediately after the Second World War the RCAF was cut back drastically and only five of the eight authorized squadrons found their way onto the regular order of battle between 1945 and 1950. With the coming of the Cold War, the RCAF expanded quickly and by 1955 the RCAF had reached a post-war peak of almost 3,290 aircraft in 41 squadrons (29 regular and 12 Auxiliary) with 54,000 men and women on strength.[115] Throughout the Cold War the Canadian air force worked closely with the USAF, particularly in the air defence of North America in NORAD and with American air forces overseas in NATO. This led to the purchase of almost exclusively American aircraft types and the adoption of American air doctrine in most roles.

Very little research has been done on cultural aspects of the Canadian air force; however, a few generalizations can be made from the limited material available. Before the Second World War the Canadian air force imitated its British counterpart in doctrine, ranks, and uniforms. By the Second World War the "Canadianization" of overseas squadrons demanded by the public resulted in a gradual shift towards a more Canadian character in the RCAF overseas. At home, the British Commonwealth Air Training Plan not only perpetuated a Canadian way of doing things among the majority of the RCAF who remained on this side of the Atlantic, but it also exposed many British aircrew trainees to a Canadian culture very different from the culture they had come from in the United Kingdom. With the advent of the

---

[111] Douglas, *The Creation of a National Air Force*, 138; and C. P. Stacey, *Arms, Men and Governments* (Ottawa: Queen's Printer, 1970), 48.

[112] John Terraine, *The Right of the Line* (London: Hodder and Stoughton, 1985), 258; and Douglas, *The Creation of a National Air Force*, 247.

[113] Desmond Morton, *A Military History of Canada* (Edmonton: Hurtig Publishers, 1985), 225.

[114] Allan D. English, *The Cream of the Crop*, 141.

[115] J.A. Foster, *For Love and Glory* (Toronto: McClelland & Stewart, 1989), 124; [Brett Cairns], "Canadian Military Aerospace Power," Vol. 1, (Toronto: Canadian Forces College, nd), 21.

Cold War and its close association with the USAF in both NORAD and NATO, the RCAF and later the Canadian air force came under the strong cultural influence of its neighbour to the south.[116] As we shall see, the Canadian air force has moved its culture closer to its American cousin than the other two Canadian services to their American analogues.

Navy Culture. This summary is included at this point for quick comparison to the other services; for the purposes of this study, a longer examination of key issues is included as a separate section, "Determinants of Canadian Naval Command Styles: An Historical Perspective".

Prior to the Second World War the Canadian navy, unlike the army, had not participated in any nation-defining historical acts, and the leadership of the Royal Canadian Navy (RCN) saw the proper professional focus of the navy as a blue water force prepared to fight in distant waters alongside the Royal Navy (RN) in a major conflict.[117] This is not surprising considering that in 1922 the navy consisted of 450 personnel borrowed from the RN and only about 50 Canadians. Even though by 1927 those numbers had reversed and there were 460 Canadians in our navy serving with 40 RN personnel, the Canadian navy remained "utterly dependent on the Royal Navy both for legitimacy and for formal training." However, the gulf that had grown between the RCN and the nation prior to 1939 was diminished considerably in the Second World War.[118] It was the "trench warfare of the seas" during the Battle of the Atlantic (1939-45) that provided the "self-defining mythology and lore surrounding the Canadian navy" in the future. The modern Canadian navy came of age in the Second World War and the navy and other government departments deliberately created its identity during the war. This change of identity was possible because the character of the navy changed from that of a tiny, anglophile regular force into the "youthful culture" of the Canadian naval reservists who formed the major component of the wartime RCN.[119] Just as important from a military culture point of view, the Battle of the Atlantic was the navy's Vimy Ridge where the navy was deemed to have embodied all that was best about Canada and was "a revelation of the latent power of the nation."[120]

The wartime transformation of the RCN's culture had important ramifications for the postwar force, because what a navy can do is largely based on its "traditions, values, and behaviour," what Crickard calls the "strategic culture," of its officer corps. Since at least the Second World War the "operational ethic" that has permeated the Canadian, as well as the British and American navies, has been the cultivation of a fighting spirit, initiative, and a preference for offensive action. Perhaps more so than armies or air forces, navies have clung to tradition, and this propensity, combined with the "decades-long" lives of ships, has made their organizational cultures more resistant to change than the other services.[121] However, the beginning of the Cold War thrust major change upon the RCN. For the first time in its history Canada committed itself to a fairly large standing navy, with a fleet of large and powerful new ships to be manned by a professional force. In the immediate postwar years the RCN started its transition from the British to the American way of doing things, so that by the Korean War, according to Milner, the RCN was "perhaps the only navy in the world capable of working effectively and easily alongside the USN [United States Navy]." One manifestation of a new Canadian culture in the RCN was the decision to build a uniquely Canadian-designed and constructed fleet. By the early 1950s, with the adoption of a primarily anti-submarine role, plans to build distinctly Canadian warships, to adopt North American (vice British) living standards on board ship, the re-introduction of the maple leaf on ships' funnels and the "Canada" flash on uniforms, and the replacement of Trafalgar day with Battle of the Atlantic Sunday as the RCN's new "feast day," a new Canadian ethos was being developed in the RCN.[122]

---

[116] Granatstein, "The American Influence on the Canadian Military," in B.D. Hunt, and R.G. Haycock, eds., *Canada's Defence* (Toronto: Copp Clark Pitman, 1993), 134.

[117] Fred W. Crickard, "Strategy, the Fleet-in-Being, and the Strategic Culture of the Officer Corps," in Hadley, et al., *A Nation's Navy*, 60.

[118] Marc Milner, *Canada's Navy: The First Century* (Toronto: Univ. of Toronto Press, 1999), 72.

[119] Hadley, "The Popular Image of the Canadian Navy," in Hadley, et al., *A Nation's Navy*, 36-40.

[120] Hadley, "The Popular Image of the Canadian Navy," in Hadley, et al., *A Nation's Navy*, 50.

[121] Crickard, "Strategic Culture of the Officer Corps," 57-60.

With the end of the Cold War, the Canadian Navy – like the other services – found its traditional warfighting role called into question. Prominent naval historian Michael Hadley noted that the impression held by "many citizens... that today's navy projects itself largely as an aggressive 'militaristic' force" perhaps in turn accounted for "its frequent lack of public support." He was uncomfortable, however, with the suggestion the Navy should "search for some new kind of authentication... in 'non-traditional roles' [in support of other government departments, such as] fisheries' and sovereignty patrols, constabulary and diplomatic duties," feeling that the authors of these ideas were "seemingly unaware that these tasks were the distinctly Canadian sources from which Canada's naval force had sprung."[123] Indeed, a Treasury Board investigation in 1990 into the feasibility of integrating the various government marine fleets had concluded there was little to be gained by this concept, mostly because the broad scope of maritime activity precluded integration, but also because of the different cultures of the various fleets. Although the investigation did not put it so bluntly, there would always be a need for an armed force of last resort, and a separate Navy was the best vehicle to achieve that.[124]

The Navy spent much of the 1990s in the soul-searching exercise of determining its strategic *raison d'être*, culminating in 2001 with the publication of *Leadmark: The Navy's Strategy for 2020* and its affirmation that the solid foundation of "a globally deployable, multipurpose and interoperable, combat capable fleet" is essential to the effective undertaking of any other diplomatic and constabulary tasks.[125] Although ostensibly a re-statement of the Navy's traditional role, the difference now was that it had been defined categorically in distinctly Canadian terms. The Navy entered the 21st century confident in its purpose. The supremely successful conduct of anti-terrorist operations in the Arabian Sea served to validate that self-assessment.[126]

A "Canadian Forces Culture." The appearance of what could be termed a Canadian Forces culture, as opposed to three separate service cultures, occurred when the three services were forcibly merged in the 1960s. Some integration took place in the late 1940s and 1950s when the MND, Brooke Claxton, combined the medical, dental, legal, and chaplain services, along with some clerical support, in the armed forces. Key headquarters staff functions, such as operations, procurement and personnel, were also grouped together regardless of service affiliation. Eventually some 200 inter-service coordinating committees were established to try to bring the operating procedures of the services into accord.[127] Bercuson dates the beginning of the end of the "old army" to 1963 with the Glassco Royal Commission, which was struck to recommend ways to correct overlap and inefficiency in the armed services.[128] This inquiry was prompted chiefly by the declining percentage of funds to replace equipment in the service budgets. In 1954, 43 percent of the annual defence budget was spent on equipment; however, by 1963 the figure was 13 percent, and it was projected that by 1965-66 there would be no money available for equipment purchases. But the real changes came under Paul Hellyer, MND from 1963 to 1967, whose own wartime experience as surplus aircrew transferred to the army, where he discovered drill, medical standards and much else were not the same, motivated many of the changes.[129] Beginning in 1964, reforms such as abolishing the three service chiefs and replacing them with a single CDS were implemented, and Hellyer's reforms culminated in 1968 with the unification of the three services into the CF wearing a single green uniform.

---

[122] Milner, *Canada's Navy*, 168-71, 173, 175-6,179,184, 195.

[123] Hadley, "The Popular Image of the Canadian Navy," in Hadley, et al., *A Nation's Navy*, 55.

[124] *All the Ships That Sail: A Study of Canada's Fleets* (Ottawa: Treasury Board, 15 October 1990) [commonly referred to as *The Osbaldeston Report*].

[125] *Leadmark*, 98.

[126] Richard Gimblett, *Operation Apollo: The Golden Age of the Canadian Navy in the War Against Terrorism* (Ottawa: Magic Light, 2004).

However, the Department of National Defence was still a fragmented organization, and until 1972, despite unification, the Minister received direct reports from four senior officials, namely the Chairman Defence Research Board, the Chief of the Defence Staff, the President of Defence Construction Limited, and the Deputy Minister. In that year, the Management Review Group (MRG) completed its study, and most of its major recommendations were accepted. Out of that emerged the "modern" National Defence Headquarter, largely unchanged except in minor ways to this day. The major change implemented as a result of the MRG report was the amalgamation of military and civilian staffs. Another change was to put the defence construction and research functions under the Deputy Minister.[130] Unfortunately for the Canadian Forces, the so-called Pennefather report[131] also recommended that Assistant Deputy Ministers assume responsibility for personnel and material support processes at the strategic level, which in its implementation also involved a good many support processes and forces at the operational and tactical levels. This left the three military commanders (who were and are responsible for generating forces for operations, and in some instances for employing forces) without overall control of some of the vital elements that contribute to the combat readiness of those forces. This problem was tackled during project Defence 2000[132] and some headway was made to solve it, but elements of this problem remain. Furthermore, because the Canadian Forces' operational chain of command was subsumed in the so-called "matrix" of NDHQ, at the military strategic, operational, and even in some instances at the tactical levels, there was and is potential for confusion in the flow of military advice and decisions up and down the chain.[133]

---

[127] Milner, *Canada's Navy*, 187.

[128] Bercuson, *Significant Incident*, 69.

[129] Milner, *Canada's Navy*, 236-7.

[130] Dan Mainguy, "What Good Old Days?" *National Network News* vol 4, no.1, (The Defence Associations National Network, January 1997), at http://www.dann.ca/Backissues/nn4-1_3b.html.

[131] *Report to the Minister of National Defence on the Management of Defence in Canada*, (Management Review Group, July 1972).

[132] The Management Command and Control Re-engineering Project ran from 1994 to 1997. One of the important projects within it was Project C-15, Force Generation Responsibilities, which was allowed to address some but not all of the issues.

One uniform and one command structure did not, however, create a single military culture in Canada, and in the mid-1980s distinctive service uniforms were restored, reflecting the continued existence of three service cultures within the CF. But unification did bring cultural change to the officer corps of the CF. With administrative efficiency and bureaucratic control as the main aims of unification, civilian bureaucrats were soon brought into the military decision making process as has been described. While there were necessary and good outcomes in terms of DND's external relations with government, internally there was an expectation at the higher levels of NDHQ that senior and flag and general officers should place "administrative acumen above military insight on the list of qualities required of CF officers." This led to what Bercuson calls the rise among senior and middle rank officers of the "military technocrats" who, by espousing civilian and bureaucratic values which conflicted with traditional military values, became confused about their proper role in the defence hierarchy.

Other changes followed the infusion of business values into DND. As part of the drive for efficiency, many smaller units were moved to new, large bases, and increasingly, military personnel lived off base, "on the economy." This had the double effect of junior leaders losing the close contact they previously had maintained with their men when they lived in barracks and of bringing service people into closer contact with civilian society. In addition, the majority of military personnel now had a spouse and often a family. These trends were also visible in the British and American armies, and were seen by them as undermining their military ethos. [134]

Leadership in the CF offers the following comments on changes in Canadian society that will affect how leadership and command are exercised in the CF in the future. "In addition to adapting to new operational requirements, CF leaders must also adjust to the changing characteristics of the recruit pool and the equally shifting composition of the armed forces. Over the past several decades, the demographic make-up of Canada has become less Western European and more ethnically and racially diverse. In accommodating ethno-cultural value differences, the challenge for CF leaders is to promote a common understanding and acceptance of the military's professional values, especially as they relate to Canadian civic values. The CF recruit population is also becoming more varied in terms of age and marital status. The traditional youth recruitment base is shrinking, competition in the labour market is increasing, and the CF has had to make an effort to attract older and often better-qualified applicants. Meanwhile, social attitudes among Canadians have become more liberal and individually focused, largely as a result of social legislation, continuing upward trends in educational attainment, and improved access to information. One parallel development is that trust in public institutions and deference to authority are down, while independent judgment and awareness of individual and minority rights are up. Taken together, these changes mean that, to be effective in building individual commitment and teamwork, leaders will have to demonstrate strong interpersonal skills, a willingness to be open and candid with their subordinates, and behaviour that is both mindful of differences in maturity and conscientious in addressing individual and group concerns."[135]

---

[133] Lynn Mason and Raymond Crabbe, *A Centralized Operational Level Headquarters*, report prepared for the Department of National Defence, December 2000), 52-3.
[134] Bercuson, *Significant Incident*, 69-76.

Now that we have summarized how history has helped to shape a unique Canadian military culture, we will focuses on environmental influences on command and leadership styles in the Canadian military

Part 2 – Differences In Canadian Command And Leadership Styles[136]

The cultural differences described in the previous section have had a direct impact on how the Canadian environments (or services) conceive of and carry out command functions. This part of the study describes some of the key differences in environmental command styles with a focus on Navy command styles.

Modern warfare is characterized by operations where the forces of different nations and different services (army, navy and air force) work together to accomplish a mission. This creates leadership challenges at all rank levels in the military. While there is some literature on the challenges of working in multi-national coalitions, the literature on leadership in joint[137] operations is extremely sparse, despite the fact that joint operations are even more numerous than combined[138] operations.

Some may assume that the Canadian Forces (CF) have overcome the problem of service (or environmental) differences in leadership because it is, in law, a unified service. Yet, even in the unified CF, where basic officer training and many courses are conducted in a joint environment, leaders spend their most formative years in a single service culture that shapes their attitudes, values and beliefs about what is an appropriate leadership style. This process influences their expectations about what constitutes "good" and "bad" leadership styles. One of the biggest problems in the CF today is a lack of understanding about the differences in service leadership styles. For example, some army officers have characterized certain senior leaders from the other services in joint appointments as indecisive or not forceful enough, and some army officers have even remarked on the lack of physical fitness or the small stature of air force and navy leaders in the context of their perceived less than adequate leadership. On the other hand, some officers of the other two services have from time to time described certain senior army leaders in joint appointments as "all muscle and no brains" or micromanagers because they try to make forceful interventions in areas where they have little expertise.

---

[135] *Leadership in the CF*, Intro-5.

[136] This part of the paper is based on Allan D. English, "The Masks of Command: Leadership Differences in the Canadian Army, Navy, and Air Force" (paper presented to the Conference on Leadership in the Armies of Tomorrow and the Future, Kingston, ON, 6-7 Feb 2002, and the Inter-University Seminar on Armed Forces and Society, Kingston ON, 25-27 October 2002).

[137] "Joint" is defined as activities, operations, organizations, etc in which elements of more than one service of the same nation participate. "Glossary," *Canadian Forces Operations*.

[138] "Combined" in this context means activities, operations, organizations, etc between two or more forces or agencies of two or more allies. "Glossary," *Canadian Forces Operations*.

Many of these views are based on service-based expectations about what good leadership looks like. Some of the views are based on stereotypes, others on fact. However, we currently have very little in the way of research to sort myth from reality on this topic. In fact we have not even identified, in any systematic way, all the service-based views on leadership. Many of these views have historical roots; therefore, by examining the question of inter-service leadership over a relatively long period of time we can come to a better understanding of the challenges of leadership in a joint environment in the 21st century.

While most of the military leadership literature focuses on the experience of land forces, almost all military personnel know from their own experience that there are distinct differences in the leadership styles commonly used in the army, navy, and air force. Each service has a unique culture that influences acceptable leadership styles in that service. At the same time, each nation has a singular culture that is another variable in the leadership equation. This means that studies done by other nations are not necessarily applicable to the Canadian context. Therefore, to address some of the gaps in the literature leadership differences in the context of the cultures of the Canadian services will be examined. Air force and navy leadership has been emphasized here because maritime air assets are an integral part of naval force, and, in Canada, these assets are provided by the air force. Therefore, in a Canadian context, aspects of air force leadership enter into the naval leadership equation. The focus here is mainly on officer leadership in the three services because Non-Commissioned Officer (NCO) leadership could be a separate paper on its own. Furthermore, it is acknowledged that personalities can have a greater impact on leadership style than service background, but that field will be left to others to examine. It is also acknowledged that there are many similarities in service leadership styles. But the emphasis here will be on the more neglected, yet equally important, aspect of differences in leadership, as this has become particularly relevant in today's context of joint operations where leaders of the three services interact more regularly than in the past.

Leadership in History. The study of military leadership and the culture upon which that leadership is based is a multi-disciplinary endeavour and each discipline has its contribution to make. History's contribution to this undertaking is to provide both data and context. Historians specialize in the evaluation of sources, everything from documents held in archives to oral histories, to produce verifiable data for the study of leadership in the past. Perhaps just as important, historians describe the times in which military leaders lived, including the culture that shaped the leaders and in which they exercised command. As Sir Basil Liddell Hart put it, history tries "to find out what happened while trying to find out why it happened." In so doing, it seeks causal relationships between events that can provide analogies that may not teach us exactly what to do today but can teach common mistakes. Liddell Hart also tells us that history has a practical value because historical experience is infinitely longer, wider and more varied than individual experience.[139]

Heroic Leadership. One of the most popular historical books on military leadership is John Keegan's *The Mask of Command*, "a book about the technique and the ethos of leadership and command." Keegan argues that European culture produced a distinctive leadership style that joined Alexander and Wellington across the centuries in "motive and method," despite subtle shifts in culture that made them somewhat different.[140]

---

[139] B.H. Liddell Hart, *Why Don't We Learn From History?* (New York: Hawthorn, 1971), 15.

While every individual mask of command is unique (based on factors such as personality, previous experience, education and so on), some of the framework of the mask may be common to all three services, especially in Canada where a significant amount of officer leadership education and training is done in a tri-service environment. Nevertheless, since most formative operational leadership experiences occur during an officer's early years in the military, and since much of this time is spent in a single environment, each officer's mask bears a distinctive service imprint.

A key theme in Keegan's book is that good leaders authenticate themselves in their leadership role by sharing risks with their followers. This cultivates a kinship between leaders and their followers and gives leaders the moral legitimacy, beyond their legal authority, that they must have to be successful. Keegan defined the heroic style of leadership as "aggressive, invasive, exemplary, risk-taking."[141] Based on Keegan's analysis, this revised definition of heroic leadership in a 21st century context is proposed – conspicuous sharing of risk with subordinates. As will be seen in the next section, "The Historical Development of the Anglo-American Tradition of Naval Command," these characteristics are at the essence of that tradition.

Keegan's examination of leadership was based on a comparison of the masks of command used across the centuries, among various nationalities, but primarily focussed on land forces. This study extends Keegan's analysis by looking at some of the masks of command used in the past 100 years by Canadian leaders in the three environments in which the army, navy and air force fight. However, to properly understand leadership in the past 100 years, it is suggested that in addition to Keegan's "heroic" leadership, there is another type of leadership that became increasingly important in the 20th century and that has become indispensable in the 21st century.

Technical Leadership. Technical leadership, as used here is defined as the ability to influence others to achieve a goal based on the specialized knowledge or skill of the leader. Technical leadership is exercised by leaders who must be able to either actually do the same job as their subordinates (e.g., pilots), or by leaders who must have a significant specialized knowledge of the jobs that their subordinates perform (e.g., the seamanship skills of the naval officer). This type of leadership is critical in the navy and air force, where every second they are at sea or in the air those on board ships and aircraft depend on technology (and by extension the technical ability of the crews and their leaders) for their very survival not just their ability to fight. Technical leadership in pilots is most clearly different from the traditional concept of army leadership who must, as we will see, be able to demonstrate an acceptable level of flying skill before they will be accepted as leaders.

---

[140] John Keegan, *The Mask of Command* (London: Jonathan Cape, 1987), 113, 118-19.

[141] Keegan, *The Mask of Command*,10.

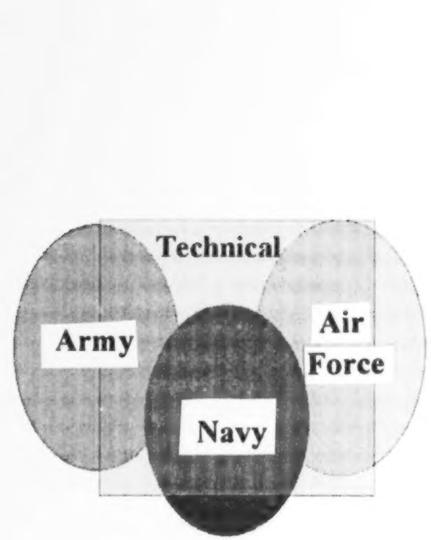


Figure 2. Leadership Styles

While technical leadership is found in all three services in different proportions (as shown in Figure 2), it is argued here that the fact that navy and air force leaders are given regular assessments of their technical ability, not just leadership skills, shows how important this technical aspect of leadership is in these services. This is particularly evident in the air force where aircrew leaders at all levels are given regular check rides by designated standards personnel who are often junior in rank to the person being evaluated.

However, the land-centric focus of much of the leadership literature leads many, particularly those with little knowledge of military culture, to assume that the masks of command used in the navy and air force are nearly identical to those masks used in the army. Some work has been done to address this issue, unfortunately almost none of it in Canada.

Differences in Service Culture. Carl Builder's model of the cultural differences among the American services is a useful starting point because it outlines some general characteristics of Western army, navy and air force cultures today. Builder contends that the touchstone of US Army's organizational culture is the art of war and the profession of arms; in other words concepts and doctrine are the glue that unifies the army's separate branches. For the US Navy, the heart of its organizational culture is the navy as an institution, based on tradition, plus a maritime strategy, that provide coherence and direction to the navy. The US Air Force in contrast, he declared, has identified with platforms and air weapons rooted in a commitment to technical superiority, and it has transformed aircraft or systems into ends in themselves. Builder claimed this lack of an air force vision has had serious repercussions for it. Writing in the early 1990s, Builder maintained that, because the US Air Force had no integrating vision like the US Army's AirLand Battle or the US Navy's Maritime Strategy, it had conceded the intellectual high ground to the other services particularly the Army.[142] Builder does not discuss the US Marine Corps culture in detail, but it has been described as worshipping "at the altar of its uniqueness," and because of its unique roles it has not been as strongly affected by the end of the Cold War as the other US services have been.[143]

---

[142] Carl H. Builder, *The Icarus Syndrome: The Role of Air Power Theory in the Evolution and Fate of the US Air Force* (London: Transaction Publishers, 1994), 5-7.

We can see some similarities in Canadian service culture in Builder's model. For example, the army invests a great deal in doctrine; the air force invests very little and remains focussed on platforms;[144] and the navy with its deep-rooted traditions and new maritime strategy "Leadmark" exhibits many cultural similarities to its American analogue. However, beyond these basic similarities with the American services, Canadian military culture is based on its own historical experience.

A brief comment on the differing hierarchies of loyalty in the three services based on cultural differences may be appropriate here, because the order in which military personnel perceive their loyalties to lie may shed some light on differences in service leadership and command. It appears that because people change units (ships and squadrons) frequently in the navy and air force their hierarchy of loyalty is:1) service (navy or air force), 2) job/occupation (maritime engineer, pilot, etc), then 3) unit (ship or squadron). There is some culturally based evidence for this assumption, as in the pre-unification RCN and RCAF the officers' cap badges were the same for all officers in each service.[145] For the Canadian infantry, and to some degree the armoured corps, it seems to be 1) regiment 2) branch (infantry or armoured), then 3) the army as a service. For other army branches, because of their relatively high technical leadership component, it may be: 1) job/branch 2) service 3) unit.

In the discussion that follows the proposition that Canadian military leadership is balanced differently, in unique ways, between heroic leadership and what has been called technical leadership will be examined. Given the nature of this paper, the focus here will be on naval leadership; however, a brief description of air force leadership follows to highlight the differences between air force and navy leadership.

Air Force Leadership. Before the First World War and during the first two years of the war, almost anyone who could get a private pilot's licence and met basic enrolment standards was accepted to fly for the Royal Flying Corps (RFC), still a part of the British Army at that time. Pilots held ranks ranging from Corporal to General Officer, and a pilot's rank was more dependent on his social status than flying ability. In these early days of military flying, two-seater aircraft were frequently commanded by the observer, often an artillery officer, who outranked the pilot. During the First World War one's military occupation (like pilot) did not determine leadership status in the RFC/RAF. As the war became more technically complex, new occupations were created, such as armaments, photography, and wireless, to complement the earlier technical trades of riggers and fitters and support trades like administration, motor transport, and stores. With the huge increase in size of the British air services, from just over 2,000 men in 1914 to over 290,000 men and women in uniform in 1918,[146] all of these specialties developed their own officer and NCO corps that were responsible for overseeing the technical expertise necessary to keep the flying services operational.[147]

---

[143] Ulmer, et al., *American Military Culture*, 13.

[144] See Brian D. Wheeler, et al., "Aerospace Doctrine?" in David Rudd, et al., eds., *Air Power at the Turn of the Millennium* (Toronto: Canadian Institute of Strategic Studies, 1999), 141-77 for an overview of the problems with Canadian aerospace doctrine. A more detailed account may be found in John Westrop, "Aerospace Doctrine Study," unpublished report dated 30 Apr 2002, copy at Canadian Forces College library.

[145] Unification disrupted this to some extent, with Logistics, Administration and Medical, for example, labelled separate classifications and given distinctive badges. Within the former, Sea Logistics always held itself as a distinct sub-set from the others, and the Navy recently re-incorporated it as an element of the "Sea Operations" Branch, even if it still retains the separate badge.

However, after the war the RAF and the Canadian air services were drastically reduced in size. In terms of leadership, this meant that most specialists were demobilized and almost the entire officer corps consisted of pilots to ensure that as many of them as possible were available to fly in the minuscule air forces of the inter-war years. One reason for this policy was that even constant peacetime flying took its toll due to stress, and ground jobs were generally reserved for pilots who were taking a break from flying. Therefore, in addition to their flying duties, career air force pilots were expected to specialize in another trade, e.g., armaments, photography, or navigation.[148] At the time the RCAF referred to pilots as "general list" officers (the RAF still refers to its aircrew as General Duties officers) because they were not viewed as specialists, but people who can fly and also do ground jobs as opposed to specialists, like "engineering officers" who can only perform ground duties.

As in the First World War, the massive expansion of the technical trades in the Second World War led to the reappearance of the officer and NCO hierarchies that had almost disappeared after that war. Even so, it was the aircrew who did most of the dying and held most of the senior command positions. While groundcrew out-numbered aircrew five to one, 94 percent of the RCAF's fatal casualties were aircrew.[149] After the Second World War, despite the continued existence of most of the technical branches and many of their officers and senior NCOs, the RCAF senior leadership was composed mainly of pilots, a trend that persisted in the Canadian air force until relatively recently when officers from other occupations, e.g., air navigators, could command squadrons and an aerospace engineering officer could become Assistant Chief of the Air Staff.[150]

The dominance of pilots in the air force command structure had a number of implications for air force leadership. While a great deal more research is needed in this area, it might be fair to characterize air force leaders as requiring technical leadership skills more than heroic skills as shown in Figure 3.

---

[146] H.A Jones, *War in the Air, Appendices*, (Oxford: Clarendon Press, 1937), Appendix XXV.

[147] Winter, *The First of the Few*, 110-120 gives a description of some of the work performed by groundcrew in the First World War. H.A. Jones, *War in the Air,* Vol. 5 (Oxford: Clarendon, 1935), chapter 8 gives an account of how training for the new trades was conducted.

[148] Douglas, *The Creation of a National Air Force*, 145.

[149] Stacey, *Arms, Men and Governments*, 66, 305;and W.R. Feasby,ed., *The Official History of the Canadian Medical Services 1939-1945* (Ottawa: Queen's Printer), 512.

[150] The custom of choosing leaders from among pilots was less predominant in maritime patrol and maritime helicopter squadrons where naval traditions had some influence and there was less concern with the occupation of squadron and flight commanders as long as they were aircrew. See James F. Johnson, "Air Navigators and Squadron Command Opportunities," *Canadian Forces Polaris* 2, no. 1 (1973), 40-1.Issues of aircrew leadership also were raised by me in a number of presentations to air force officers starting in 1999 and first published as Allan English, "Leadership and Command in the Air Force: Can Non-Aircrew Command Flying Squadrons?" Given at the 6th Air Force Historical Conference, Cornwall, ON, 21-23 June 2000. Published in Office of Air Force Heritage and History, ed. *Proceedings: 6th Annual Air Force Historical Conference*. Winnipeg, MB: Air Force History and Heritage, 2000, 79-86.

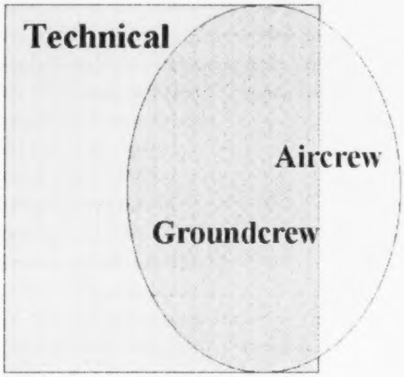


Figure 3. Air Force Leadership

Besides the degree of technical leadership style used by aircrew and groundcrew officers, there are other significant differences between them. Unlike most groundcrew officers who, like junior army officers, often lead small sections as part of their first job, aircrew rarely get the chance to lead until they reach the rank of major and became flight commanders. Furthermore, most of their leadership experience is with peers and fellow officers and not airmen or airwomen. This also means that aircrew do not receive mentoring from senior NCOs in the same way groundcrew officers do and like junior officers in the army receive in their first command appointments. Therefore, most senior air force leaders have very different formative experiences from army (or for that matter naval) officers as they acquire their leadership skills. One would expect that this would lead to very different approaches to leadership in joint command situations, something that was noted by those who observed the genesis of pilots in leadership roles in joint operations in a naval setting.

Navy Leadership. The idea that there were fundamental differences among the members of the services has a long history because as early as 1918 Britain's leading medical journal had "...ascertained that really good pilots are almost invariably bad sailors."151 Some may still hold this view today, but, like the air force, technology and those who direct its use has been integral to a navy's fighting ability. In Nelson's navy, for example, the man'o'war was the most complex weapons system of its time and it was supported by a highly sophisticated

---

[151] "The Doctor and the Airman," *The Lancet*, 16 March 1918, 411.

characterize air force leaders as requiring technical leadership skills more than heroic skills as shown in Figure 3.

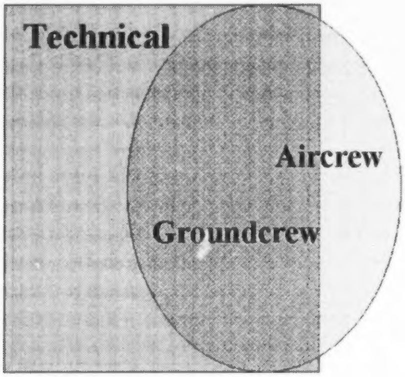


Figure 3. Air Force Leadership

Besides the degree of technical leadership style used by aircrew and groundcrew officers, there are other significant differences between them. Unlike most groundcrew officers who, like junior army officers, often lead small sections as part of their first job, aircrew rarely get the chance to lead until they reach the rank of major and became flight commanders. Furthermore, most of their leadership experience is with peers and fellow officers and not airmen or airwomen. This also means that aircrew do not receive mentoring from senior NCOs in the same way groundcrew officers do and like junior officers in the army receive in their first command appointments. Therefore, most senior air force leaders have very different formative experiences from army (or for that matter naval) officers as they acquire their leadership skills. One would expect that this would lead to very different approaches to leadership in joint command situations, something that was noted by those who observed the genesis of pilots in leadership roles in joint operations in a naval setting.

Navy Leadership. The idea that there were fundamental differences among the members of the services has a long history because as early as 1918 Britain's leading medical journal had "...ascertained that really good pilots are almost invariably bad sailors."151 Some may still hold this view today, but, like the air force, technology and those who direct its use has been integral to a navy's fighting ability. In Nelson's navy, for example, the man'o'war was the most complex weapons system of its time and it was supported by a highly sophisticated

---

[151] "The Doctor and the Airman," *The Lancet*, 16 March 1918, 411.

technical infrastructure.152 Arguably, in this age of nuclear powered strike carriers and ballistic missile firing submarines, the analogy remains true.

There are three important points for this study of leadership that come from naval history. First of all, technical competency was a crucial attribute for officers. Unlike the British army where commissions were purchased until 1871,[153] the Royal Navy (RN) always insisted that officers pass rigorous exams before being commissioned and before being qualified to assume command of a vessel.[154] This is still true today as naval officers are still required to submit rigorous command exams if they wish to become the master of a vessel.

Second, in the 18th and early 19th century the RN only had two operational commissioned officer ranks - lieutenant and captain - and advancement was largely by merit.[155] Promotion (or demotion) occurred by moving up (or down) to more (or less) demanding ships. For example, a captain might start his command career with a small sloop (18 guns) and advance all the way to command a first rate ship of the line (100 guns), but he still retained the rank of captain. This reflected the realities of leadership in the naval world and is still reflected in the ranks of some European navies and in the French translations of CF naval ranks.[156] This RN rank system gave a great deal of flexibility in employing officers, and perhaps it is more suited to today's highly technical and demanding leadership environment than the multi-layered system in use today.

Third, all those who held the Queen's commission in the RN, (i.e., Lieutenants and Captains) were professional seaman and professional warriors. The division between professional seaman and others was evident in the crew's organization. The ship's company was divided into two groups: those who stood watch (the professional seamen, or "watchkeepers") and the "idlers" (all those technicians who supported the ship and its company, such as amourers, cooks, the chaplain, the barber-surgeon, etc.). The idlers usually comprised less than 10 percent of the crew of about 800 on a first rate ship of the line.[157]

The culture of the navy, including the Royal Canadian Navy (RCN), put a premium on both technical ability (seamanship) and career status (professional naval officer versus other officers). This was formalized in the rank insignia, which was different for each category of officer in the Canadian naval service in the Second World War, so that all, particularly the many wartime newcomers to the naval service, could be made aware of the cultural assumptions shown in Table 3 below.

---

[152] The complexities of this weapon system are described in Roger Morriss, *The Royal Dockyards During the Revolutionary and Napoleonic Wars* (Leicester: Leicester Univ. Press, 1983).

[153] Correlli Barnett, *Britain and Her Army 1509-1970* (London: Allen Lane Penguin Press, 1970), 307-9.

[154] An excellent description of the naval officer corps at this time can be found in Michael Lewis, *A Social History of the Navy 1793-1815* (London: Allen & Unwin, 1960). See pp 141, 267-8 on the competency issue.

[155] Midshipmen were officers under training and admirals (flag officers) were promoted strictly by seniority.

[156] For example, Lieutenant Commander is capitaine de corvette; Commander is capitaine de frégate; and Captain is capitaine de vaisseau.

[157] See Lewis, *A Social History*, 85-6, 270-80, for description of the crew and their duties.

When the RCN Voluntary Reserve (RCNVR) was created in 1923 it adopted the "wavy navy" stripes of the RN Voluntary Reserve for officers and some of its traditions are perpetuated in the CF's naval reserve today. As a wartime expedient, the RCN Reserve (RCNR) was created from the pool of merchant seaman in Canada, and its rank insignia was also distinctive. The rank insignia worn by each officer group in the Canadian naval service made clear the stereotypes attached to each class of naval officer as shown in Table 3. The RCNR were seen as merchant mariners who were professional sailors but who had no experience with war at sea. The RCNVR were perceived to be "landsmen" who had experience neither at sea nor with war at sea. Some yachtsmen-dilettantes from Toronto's social elite fit this stereotype of poor sailors and bad officers, and they publicly criticized the Navy and the way it treated reservists in the press (including their yachting magazines) during the war. The reality, however, was that by 1944 many of these reservists had more operational time at sea and time in contact with the enemy than most senior RCN officers. From a cultural perspective, some of these same wartime naval issues are found in the navy today, especially between class A and B Reserves.[158]

Table 3. Cultural Assumptions in the Canadian Naval Service in the Second World War

RCN:	professional sailor	professional warrior
RCNR:	professional sailor	amateur warrior
RCNVR:	amateur sailor	amateur warrior

Mutiny and Command in the Canadian Navy. Little has been published on Canadian naval leadership, but some scholarly insights on the subject can be found in recent work on naval mutinies or "incidents," as they were often referred to in the navy.[159] The tradition of mutiny in the Canadian navy comes from the RN (which probably adapted it from the British form of crowd social protest common in the 18th century).[160] Therefore, the stereotypical mutiny seen in films like *Mutiny On the Bounty* was rare in the navies of the British Empire and Commonwealth. The most common form of mutiny was the "industrial action" or sit-down strike to right specific wrongs. The form mutinies usually took can be imagined from these unwritten rules of mutiny in the RN: "1) No mutiny shall take place at sea or in the face of the enemy; 2) No personal violence may be employed (although a degree of tumult and shouting is permissible); 3) Mutinies shall be held in pursuit only of objectives sanctioned by the traditions of the Service." As long as they followed these rules, mutineers usually were not treated harshly. Most often, their grievances were recognized as legitimate by senior officers, and it was not unusual for the Captain of a ship and/or his executive officer to be replaced, especially if their technical abilities (seamanship) were suspect.[161] Even Nelson himself expressed support for the actions of some of the sailors in the Great Mutinies of 1797. Writing to the Duke of Clarence, who was the third son of George III and who had served with Nelson when the Duke was in the navy, Nelson said: "'I am not surprised that Your Royal Highness should have felt all the Agony of suspense during the late extraordinary Acts at Portsmouth…But to us who see the whole at once we must think that…it has been the most Manly thing I ever heard of, and does the British Sailor infinite honour.'"[162]

---

[158] Richard Oliver Mayne, "'Equal Privileges for Greater Sacrifices': Insurrection in the Canadian Naval Reserve, 1942-44" (unpublished seminar paper, 25 February 2002). In the Canadian Navy today Class A reservists serve about 14 days per year in uniform and have been compared to the RCNVR. Class B reservists usually serve for a full year often aboard MCDVs (Minor Coastal Defence Vessels) and have been compared to the RCNR.

[159] A literature on Canadian naval mutinies, and indirectly leadership, has begun to develop over the past few years. Some of the leading works in this literature are Richard H. Gimblett, "'Too Many Chiefs and Not Enough Seamen': The Lower Deck Complement of a Postwar Canadian Navy Destroyer - The Case of HMCS Crescent, March 1949," *The Northern Mariner* 9, no. 3 (July 1999), 1-22; Bill Rawling, "Only 'A Foolish Escapade by Young Ratings?' Case Studies of Mutiny in the Wartime Royal Canadian Navy," *The Northern Mariner* 10, no. 2 (April 2000), 59-69; Richard H. Gimblett, "What the Mainguy Report Never Told Us: The Tradition of Mutiny in the Royal Canadian Navy before 1949," *Canadian Military Journal* 1, no. 2 (Summer 2000), 87-94; and Michael J. Whitby, "Matelots, Martinets, and Mutineers: The Mutiny in HMCS *Iroquois*, 19 July 1943," *Journal of Military History* 65, no. 1, (January 2001), 77-103. An important new work on th4e subject of naval mutinies is Christopher M. Bell and Bruce A. Elleman, *Naval Mutinies of the Twentieth Century: An International Perspective* (London: Frank Cass, 2003).

There were a number of reasons why mutinies occurred with some regularity in the navies of the British Empire and Commonwealth. The main reason was that the divisional system (started in the RN in the 1790s), the official way of dealing with grievances on board ship, did not work very well because it seemed threatening and inefficient to many sailors.[163] This perception existed because the divisional system was adequate for dealing with petty grievances, but it was not able to handle bigger problems like incompetent leaders. One reason for the weakness of the divisional system was a general lack of communication down the chain of command. For the sailors, mutiny was a risky but proven method of dealing with serious problems that they felt could not be resolved in any other way. Senior non-commissioned members of the crew, if they saw the grievances as legitimate supported the mutinies by taking no action, tacitly encouraging them, or openly leading (as happened in the Great Mutinies of the RN in 1797) the mutiny, depending on the circumstances.[164]

---

[160] See E.P. Thompson, *Customs in Common* (London: Merlin Press, 1991), particularly chapters 4 "The Moral Economy of the English Crowd in the Eighteenth Century" and 5 "The Moral Economy Reviewed," 185-351 for a detailed explanation of this phenomenon. Thompson called this type of protest "The Moral Economy" because it kept the capitalist economy in balance.

[161] See N.A.M. Rodger, *The Wooden World* (London, Collins, 1986), 237-44 for a description of mutiny in the RN during the age of sail. See also Gerald Jordan, "Admiral Nelson as a Popular Hero," in Dept. of History US Naval Academy, ed., *New Aspects of Naval History* (Baltimore: Nautical & Aviation Publishing, 1985), 117 for the actions of mutineers in the Naval Mutinies of 1797. See Rawling, "Only 'A Foolish Escapade by Young Ratings?'" 59, 69; Gimblett, "What the Mainguy Report Never Told Us," 93; and Whitby, "Matelots, Martinets, and Mutineers," 88, 99-103 for a description of how the Canadian naval service inherited the RN tradition of mutiny.

[162] Citation from unpublished letter from Nelson to the Duke of Clarence, quoted in Dalya Alberge and Joanna Bale, "A Fool for Love: Hidden Passions of Lord Nelson," *Times Online* (4 April 2002), http://www.timesonline.co.uk.

[163] See Christopher Lloyd, *The British Seaman 1200-1860* (Rutherford, NJ: Farleigh Dickinson Univ. Press, 1968), 234; and Rodger, *The Wooden World*, 216 on the origins of the divisional system.

Postwar unrest in the Royal Canadian Navy culminated in a series of "incidents" in March 1949 that were very much in the tradition of the Royal Navy from which the RCN had inherited so many other of its traditions.[165] The investigating Commission of Inquiry (known as *The Mainguy* Report) pointed to the breakdown of the Divisional System of man management as a primary cause of the unrest (new scholarship indicates that it was, but not in the fashion portrayed by the commissioners[166]). Combined with the formal institution of all-rank Ship's Welfare Committees, the reforms have been deeply inculcated at all rank levels, and there has been no major outbreak in the Canadian Navy since then. Armies and air forces have also had their share of mutinies, but they are generally not as well documented as naval mutinies. For example, in January 1919 men of the newly formed Canadian Air Force refused to work to protest what they perceived to be intolerable living conditions and poor leadership, very much in the tradition of the naval mutiny.[167] The Canadian Army suffered similar difficulties during the Second World War at Trail, BC, but the most well known recent case, that of Matt Stopford, is also one of especial interest to this study. It was not, as some have claimed, an atypical reaction by cowards who were trying to poison their leader, but really a type of mutiny that has been fairly well documented in other military forces. The actions of the men who put "noxious substances" into the unfortunate Matt Stopford's coffee can best be understood as a form of protest against a leader they believed was unnecessarily risking their lives.[168]

Based on the discussion above, a model of naval leadership has been hypothesized as shown in Figure 4. The model has similarities with the air force model, but there are differences due to the navy's culture, for example the overlap between the technical sea trades and the idlers. The greatest similarity is the large role that the technical style of leadership plays in naval leadership. In addition this model illustrates the importance of the technical style of leadership for naval officers. Again more research is required in this area, but it appears that, like aircrew, for naval officers technical competence is at least as important as leadership competence, because without technical competence these officers could not normally hold a leadership position for long. Unlike aircrew, however, naval officers must live and work in close confines with their ratings, and especially on long sea voyages find themselves in a leadership position day-in, day-out for months on end.

---

[164] See J.G. Bullocke, *Sailors' Rebellion* (London: Eyre & Spottiswoode, 1938, 211 and G.E. Manwaring and Bonamy Dobrée, *The Floating Republic* (London, Geoffrey Bles, 1935), 34-8, 262-3, for the role of the senior non-commissioned members of the crew in leading the Spithead part of the Naval Mutinies of 1797.

[165] Gimblett, "What the Mainguy Report Never Told Us," 94.

[166] See Gimblett, "'Too Many Chiefs and Not Enough Seamen'," 12.

[167] Wise, *Canadian Airmen and the First World War*, 611.

[168] The "Detailed Report of the Special Review Group Operation Harmony (Rotation Two)" dated 26 Jun 2000, http://www.dnd.ca/menu/press/Reports/harmony_2/index-e.htm explains these issues in detail.

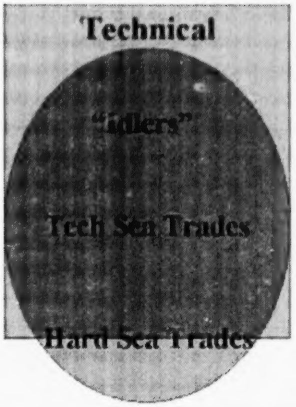


Figure 4. Naval Leadership

Conclusions. Understanding differences in leadership among the army, navy, and air force has become increasingly important in an era where joint and combined operations predominate. These differences are caused by differences in national and service cultures that vary not only among nations but among services in any given nation. This study contends that every service has different leadership expectations based on that service's mask of command. Even in the unified CF, where a significant amount of training and education is conducted in a joint environment, leaders spend their most formative years in a single service culture that shapes their views about what is an appropriate leadership style.

Until we know more a great deal more about these topics, Canadians should be cautious in using longstanding stereotypes about service leadership and accepting conclusions based on foreign data. In the interim, the Canadian military can rely on its proven strengths of joint education and training that expose officers of a given service to the other service cultures, at least in a superficial way. But until we can understand the Canadian service cultural mosaic and its impacts on leadership in the CF much more clearly than we do now, we should proceed with great prudence in adopting any enduring leadership doctrine based on prevailing, unverified cultural myths and assumptions.

These problems notwithstanding, the remaining longer sections of this study will attempt to qualify the cultural and environmental factors that have shaped command Canadian naval command styles. Before proceeding to them, however, it is useful to discuss the Canadian Navy's particular expectations of naval commanders and leaders.

Part 3 – Naval Command And Leadership Qualification

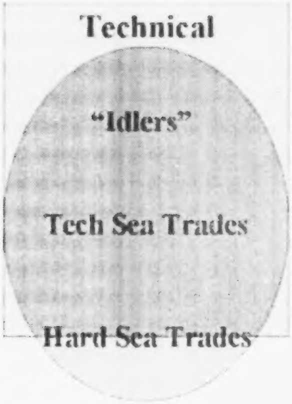


Figure 4. Naval Leadership

Conclusions. Understanding differences in leadership among the army, navy, and air force has become increasingly important in an era where joint and combined operations predominate. These differences are caused by differences in national and service cultures that vary not only among nations but among services in any given nation. This study contends that every service has different leadership expectations based on that service's mask of command. Even in the unified CF, where a significant amount of training and education is conducted in a joint environment, leaders spend their most formative years in a single service culture that shapes their views about what is an appropriate leadership style.

Until we know more a great deal more about these topics, Canadians should be cautious in using longstanding stereotypes about service leadership and accepting conclusions based on foreign data. In the interim, the Canadian military can rely on its proven strengths of joint education and training that expose officers of a given service to the other service cultures, at least in a superficial way. But until we can understand the Canadian service cultural mosaic and its impacts on leadership in the CF much more clearly than we do now, we should proceed with great prudence in adopting any enduring leadership doctrine based on prevailing, unverified cultural myths and assumptions.

These problems notwithstanding, the remaining longer sections of this study will attempt to qualify the cultural and environmental factors that have shaped command Canadian naval command styles. Before proceeding to them, however, it is useful to discuss the Canadian Navy's particular expectations of naval commanders and leaders.

Part 3 – Naval Command And Leadership Qualification

Canadian naval command seems to be distinguished from the other services in one important practical aspect, in that it is regularly subjected to rigorous outside assessment and sanction, at least at the tactical and low operational levels. The system of checks and balances represented by a range of Sea Training Workups, Task Group Readiness Inspections, and Missile Qualification Assessments is uniquely naval: the air force checks individual competency, but only in the sense of technical qualifications and not at the command or unit level, and the Somalia Inquiry underscored the fact that any such command critiquing mechanism is absent in the army. In fact in the case of the Somalia deployment the army was reluctant to accept a critique of a unit's readiness from the original commander of the Airborne contingent, who was fired because he declared his unit "not ready" for the mission even though he was ultimately proven to be correct. The naval assessment regime will be given further discussion in future sections, but some observations on it are appropriate at this stage.

There are very few rigorous studies of modern Canadian naval command and leadership. As noted in the previous part of the report, the dearth of published material on environmental or service styles of leadership in Canada provides challenges for those studying the topic. While using the few studies that do exist may skew the perceptions of researchers, until more work is published they are limited by what is available. One of the few such studies, "On an Even Keel: Warship Command Competency Beyond the Technical Skills," was completed by Commodore (now Rear-Admiral) J.Y. Forcier and Commander (now Capt (N)) David Hudock in 2000. Their findings are summarized below. The authors remind us that command of a ship in the Canadian Navy is defined as "'the authority vested in the Commanding Officer for the direction, co-ordination and control of the ship and her company.'"[169]

One issue that motivated this study was what the authors described as a "crisis" in the naval profession when Commanding Officers are removed from command because their "'... performance has not appeared to reflect the leadership standards expected of a... commanding officer of a Canadian naval vessel.'" The authors note that there "was one removal from command in each of the years 1997 and 1998" for reasons related to judgment, accountability and responsibility. Given the small size of Canada's Navy, "there are 18 major warships in Canada's Navy; thus at any one time there will be 18 major warship commanding officers," even this small number of command removals is cause for concern.[170]

The Canadian Navy is not the only navy with this problem, as the USN relieved 17 commanding officers of their duties in 2003, "nearly as many as were fired the previous three years combined." This year, as of 19 June 2004, the USN has relieved 10 commanding officers from command - "six were fired from shore commands, four from surface ships, three from aviation units and two from submarines," and two firings involved flag officers. The USN normally uses an administrative process to relieve commanding officers (COs) of their commands, using "a non judicial hearing called captain's mast that usually results in an admonishment that ends a naval officer's career path but usually allows him to retire with full benefits. Only rarely is the more serious procedure of a court- martial used." As with the

---

[169] J.Y. Forcier and David Hudock, "On an Even Keel: Warship Command Competency Beyond the Technical Skills," unpublished MA thesis, Royal Roads University (August 2000), 22. The issue of women in the command development process was not included in this project; however, the authors stated that this issue should be researched to determine if there are any differences between male and female naval officers "striving for and serving in command positions at sea."

[170] Forcier and Hudock, "On an Even Keel," 2-3.

Canadian Navy, the USN will be examining its commanding officer training and selection processes to see if there are problems that need to be rectified.[171]

In Canada, the sea command qualification process is designed to screen out those who are "weak or not prepared in one or all areas examined" by the Sea Command Examination Board. However, the command failures noted above have raised the concerns that the processes of developing leadership competencies or the identification of these competencies in candidates challenging the command qualification board may not be adequate.

In their study of Canadian naval leader selection and training, Forcier and Hudock state that "those who challenge the command examination boards are generally knowledgeable regarding technical, tactical, and policy requirements, and are usually acceptable shiphandlers and mariners," and that these are the attributes that are explicitly examined by the boards. However, they argue that leadership competencies and other attributes like "interpersonal skills, problem-solving abilities, and ethical decision making" that "are vital to the success of a commanding officer" are not explicitly examined, and yet the boards do intuitively and implicitly look for these competencies and attributes. Likewise, Forcier and Hudock found that "these competencies currently appear to be implicit rather than explicit components" of the officer professional developmental framework which unfortunately develops many leadership competencies in a haphazard manner. Therefore, while most candidates who appear in front of the Sea Command Examination Board "exhibit well-developed leadership competencies to the board, some do not." Forcier and Hudock found it paradoxical that "many of those who succeed at the Sea Command Examination Board see this seemingly unguided and ad hoc process of leadership competency development as a badge of honour." But they found it more troublesome that some of those selected for command at sea had leadership shortcomings that were not detected or corrected during the command training and selection process.[172]

Despite concern among senior naval officers that mentoring is a vital activity to develop naval officers' leadership competencies, Forcier and Hudock tell us that "the general view of many within the navy, while not formally documented, is that junior naval officers are not consistently receiving effective mentoring or guided learning in leadership competencies." This shortcoming is attributed to the inability of most Canadian naval officers to "articulate the major leadership competencies required of a successful commanding officer" and to their inability "to define or express a common understanding of important enablers of learning such as mentoring or coaching." [173]

Forcier and Hudock cite data collected from officers, both in command and waiting for the opportunity to command, that indicate that despite their success at passing the command certification process, they were missing some of the leadership competencies and attributes described above. The authors assign part of the blame for these shortcomings to the current CF and Navy individual training and education system that, they argue, focuses too much on technical training instead of educating officers to develop their critical thinking and leadership capabilities.

---

[171] Jack Dorsey, "Recent spike in CO firings incites Navy investigation," *Virginia Pilot* (19 Jun 2004), online version http://home.hamptonroads.com/.
[172] Forcier and Hudock, "On an Even Keel," 2-3.
[173] Forcier and Hudock, "On an Even Keel," 7-8.

Another problem they identify with the command development system in the Canadian Navy is that it is based on "individual self-direction as opposed to a shared responsibility between individuals and the navy." This has led to a situation where the command and leadership development process and its goals "are not well understood by many officers striving for command and even by some who should be guiding those aspiring officers." This situation has arisen, they believe, because "many officers see the Sea Command Examination Board preparation both as the prescription for command development and as the end-state, instead of the professional accreditation milestone it simply represents." Therefore, the need for continuous self-development throughout an officer's career is not emphasized enough.[174]

According to Forcier and Hudock, the Canadian Navy only formally trains its future commanders in "the requisite technical skills and knowledge" while leaving the development of leadership to a haphazard system of experiential learning. They conclude that reliance on this flawed system will not consistently provide naval officers with the required leadership competencies to be effective commanding officers.[175]

On the other hand, while there are those who would agree that the leadership development system for Maritime Surface and Sub-surface (MARS) officers is not perfect, it is a very fine system. One gets a different perspective of the quality of the leadership development program of naval officers striving for command when one examines the very positive aspects of what is provided as opposed to what is not.

The navy provides a number of opportunities for naval officers to develop their leadership skills. A naval officer works in close proximity to the CO as a Second Officer of the Watch, an Officer of the Watch, a Warfare Director, an Operations Room Officer, and finally as an Executive Officer. Granted, not all COs are great mentors but some are. Whatever the limitations of an individual CO, in the course of a naval officer's career he or she normally has the invaluable opportunity to receive feedback on their performance and to observe six or more COs very closely as they operate in every situation imaginable, sometimes under severe stress as they react to operational leadership challenges. There are years of invaluable instruction and experience gained this way with continuous opportunities for both introspection and reflection.

A different type of leadership experience awaits the naval officer in fulfilling his or her duties first as an Assistant Divisional Officer, then as a Divisional Officer, a Department Head and finally an Executive Officer. Here, the officer is in close contact with a number of sailors, whom he or she is required to interview and know. It is here that the leadership art of listening is learned and practiced.

The navy has a number of professional courses, all of which have some leadership learning objectives, from initial training at the Naval Officers' Training Centre, to Warfare Director and Operations Room Officer Courses.

---

[174] Forcier and Hudock, "On an Even Keel,"136-7.

[175] Forcier and Hudock, "On an Even Keel," 7-8.

Complementing naval courses and experience is the Canadian Forces common professional development system. It should be noted that fundamental to Minister Young's report is the fact that of the 11 leadership policies directed to the Canadian Forces for implementation, six are considered to be educational standards, or initiatives, and five are in the area of professional military education.[176] As reported by the Minister's Monitoring Committee in 1999 and 2003, the Canadian Forces took appropriate steps to implement these policies.[177] In general the external critics who reported to Minister Young were consistent in attributing leadership failure to low educational standards.

In response to this criticism, the key ministerial policy was the first leadership policy, which can be summed up with the short policy title it was been given – The Degreed Officer Corps Policy. Of all the policies, this one will take the longest to achieve for obvious reasons – officers without degrees in the CF cannot all be relieved of their duties to go to university. A number of programs and incentives have been made available, but it will take time. The excessive load for professional development currently placed on MARS Officers must also be taken into account. A recent study done for DND reveals the extent to which MARS officers are over-burdened. When their duties, self-development and coursing requirements, administrative requirements and family requirements are totaled it is clear that the "load" level exceeds "capacity" and MARS officers are burning out.[178]

When an officer enters the Canadian Forces, he or she is exposed to the Enhanced Leadership Model (ELM), which contains 26 weeks of learning divided into blocks, which may not be continuous, depending on the officer's Military Occupation Classification. After several years of experience with the ELM, the Canadian Defence Academy is planning its first evaluation of that program. The Officer Professional Military Education courses, that are part of the ELM, consist of six university courses that all officers must take and pass. These are the essential courses that provide officers with the basic leadership knowledge to commence their duties. Later, as lieutenant commanders in the command stream, they will attend the Canadian Forces College's Command and Staff Course. Throughout the ten-month course leadership objectives will be implicitly achieved and performance assessed. In addition, there is an explicit leadership package to continue to develop an officer's theoretical understanding of the subject.

What has been described is the professional leadership development that occurs leading to command certification. But, it does not stop there and there are also a series of courses in place to ensure that senior and flag and general officers continue their development as leaders.

---

[176] The Honourable M. Douglas Young, *Report to the Prime Minister on the Leadership and Management of the Canadian Forces* (Ottawa, 25 March 1997), 15-17, http://www.forces.gc.ca/site/Minister/eng/pm/mnd60.html.

[177] See *Minister's Monitoring Committee on Change in the Department of National Defence and the Canadian Forces, Final Report*, December 1999, http://www.forces.gc.ca/site/reports/monitor_com/eng/cover_e.htm, and *Minister of National Defence's Monitoring Committee, Final Report* (Ottawa, November 2003), http://www.forces.gc.ca/site/reports/mmcc/final_report_e.asp.

[178] HDP Group Inc., *A comparative Study: Human Resources Policy Load Versus Capacity CF Members*, report prepared for DND, 22 March 2002), 24-5.

In conclusion, Forcier and Hudock have made a number of valid points. Most especially, an organization that does not systematically look at the way it develops its people, or does not strive for improvement, is not a learning organization. As a result, it is likely to have only one way to go and that is down. No doubt the navy needs to take the holistic look that they recommend. However, the first piece of good news is that the "reforms" in Canadian Forces education and professional military education, from 2000 to 2003, have addressed many of the issues that concerned Forcier and Hudock.[179] The second piece is that what exists as a) naval professional leadership education, b) on-the-job training as divisional officers, c) self-development opportunities, and d) the mentoring available to each officer from a number of COs and XOs [executive officers] over many years, constitutes a leadership development regime that is probably without peer. That said, it is not perfect and there is room for improvement.

---

[179] One of the authors (Lynn Mason) served as Senior Advisor to the Minister of National Defence and to the Chief of the Defence Staff from 2000 to 2003. In 2003 he was appointed by the Minister of National Defence to Chair the Minister's Education Advisory Board.

Section 3: The Historical Development Of The Anglo-American Naval Command Culture

Introduction

The command styles of the Canadian Navy, and many other Western navies, are based on the Anglo-American tradition of naval command. This tradition has its origins in the Royal Navy. Therefore, an understanding of the origins of the cultural and environmental influences of the RN are vital to understanding command in the Canadian Navy today.

There are four significant ages in the evolution of the Royal Navy. The first comprised the steady evolutionary development of the sailing navy, from Henry VIII to the start of the reign of Queen Victoria. The second was the Victorian era, involving so much radical change that no true pattern emerged. The third was the first half of the 20th century, ending with the defeat of the Axis Powers in the Second World War. The fourth is the current era, from the end of the Second World War to the early 21st century, where change has been just as radical as in the Victorian era, but has taken place within a solid framework that has permitted it once more to be evolutionary.

Command and Control have not remained static within any of these eras. They are dependent on a number of factors – the vessels, equipment and armament, the social relations between crew, officers, and admirals or admiralty – and the needs and dictates of the government, all of which will be analyzed using the environment-technology-culture triad.

The First Age (1545-1860) – The Sailing Navy[180]

The sailing navy started with ships with sides pierced for broadside gunnery. This permitted heavier guns to be mounted lower in the hulls. John Hawkins, reconstructing her father's navy for Elizabeth I, did away with the old raised forecastle, and the walled midships, which had made earlier ships floating castles for soldiers afloat, and introduced the race-built ship, lower in line, and handier to manoeuvre, which depended on its guns in a sea fight. Ships firing broadsides cannot afford galley tactics, of working in line abreast, and must work in line ahead to avoid masking one another's fire, or worse, coming under it. Ships relying on gunfire, rather than grappling and boarding, require the heaviest possible guns, fired at the shortest possible range. The Royal Navy's ships would be notoriously overgunned in comparison to French ships, at the expense of sailing characteristics.[181] During this age there would be technical evolution in the sailing ship. They would grow larger in all dimensions, with additional canvas aloft to drive the heavier result, but in essence the sailing ship at Trafalgar would be recognizable to Drake.

---

[180] The dates signify the firing of the first broadside, 15 August 1545, to the launching of the steam driven, screw propelled, armoured, iron hulled HMS *Warrior*.

[181] Douglas G. Browne, *The Floating Bulwark: The Story of the Fighting Ship 1514-1942* (London: Cassell, 1963), 63-4, 76-7.

As ships grew larger, it became necessary to class them by size and guns. This was done by rating them into six rates of warships of decreasing firepower, fit to take their place in the line of battle (the first three rates) and cruisers (4th-6th rates), and all others, the auxiliaries, useful, armed, but not intended as war ships.[182] Rated ships qualified as vessels in the navy, and appointment to command them carried with it recognition of a captain's place in the navy, the appointment carrying post, or permanent, rank

Technical improvements would include copper bottoms, to slow fouling and prevent boring sea creatures weakening the timbers, the conversion of tillers to wheels working through pulleys to operate the rudder, and a host of improvements to guns, always aimed at delivering the heaviest shot at the shortest range in the quickest time. Despite all the improvements, it must be remembered that, at the end of the age of sail a circumnavigation of the globe was just as daunting, though not as unusual, as it had been to Drake in 1579.

The crew, as distinct from the officers, were assembled as and when needed. Initially, the needs of the navy were small, and seamen could be called from the fishing and merchant

---

[182] David Hannay, *A Short History of the Royal Navy 1217 to 1688* (London: Methuen & Co., 1898), 164 gives the rates during the reign of James I not by guns but by size of crew:

Rate	Crew
1st	400-500
2nd	250-300
3rd	160-200
4th	100-120
5th	60-70
6th	40-50

Christopher Lloyd, *The British Seaman 1200-1860: A Social Survey* (London: Collins, 1968), 80-1 has the rates laid down by Pepys in 1677, and the means of calculating crew size by number and size of guns:

Rate	Crew	Guns
1st	800	100
2nd	530	82
3rd	460	74
4th	280	54
5th	130	30
6th	65	16

E.B. Potter and Chester W. Nimitz, eds., *Sea Power: A Naval History* (Englewood Cliffs. N.J.: Prentice-Hall, Inc., 1960), 42-3 gives a history of the evolution of rating by number of guns. Geoffrey Bennett, *Nelson the Commander* (New York: Charles Scribner's Sons, 1972), 53-5 has a useful description of rates at 1789:

Rate	Guns
1st	100-120
2nd	90-98
3rd	64-84
4th	50-60
5th	32-44
6th	20-28

fleets. As ships grew in size and number, other influences came to bear. Not only were the numbers of trained seamen too small to supply the needs of the navy, but the nation grew dependent on their services in their civilian callings.[183] In addition, the costs of building and equipping ships were so crippling to the Crown, that economies tended to fall on the shoulders of the crew, making the navy an unattractive calling. In addition to the economies practiced by the Crown, there was a greater acceptance of corruption in the administration, from contractors supplying beef with, a suspect sign, horseshoes in it, to shipyards supplying green timber, or pursers taking advantage of their control of ship's supplies. Sensible seamen would normally try to sign on for foreign voyages at higher rates of pay, rather than risk their skins in the King's service in times of war. In response, the navy resorted to impressment, that is, the Press Gang, to round up warm bodies by fair means or foul, to crew ships needing a complement.[184] The Press would start by finding available seamen, proceed by offering bounties to those willing to sign on, and then progress to kidnapping men from the streets, or persuading magistrates to hand over felons.

The result was that a ship would often be crewed by a small number of trained sailors and a much larger number of landsmen. A captain, on commissioning his ship, that is, reading out his commission and taking command, would rate his crew by their abilities to the duties to be performed. From this practice comes the term "rating," to describe the sailors by their function. There was an informal social hierarchy among the crew, the skill required or the inherent danger associated dictating social position. Thus the team working the highest yards were dominant, the highest mast the most eminent. There were two watches, taking the duties in turn, to ensure that there was always a crew ready for the task required at all hours. Similarly, each gun had its own crew, of between five and nine men, depending on its size. Each crew was led by a captain, as in gun captain or captain of the maintop, not a rank but a rating. There was no shore establishment to train them, as they were not part of the navy, but a ship's crew. They had to learn by doing, and since they were needed from the moment the ship weighed anchor, they had to learn immediate and unquestioning obedience to orders. This was enforced by the Mates, the understudies to the Warrant Officers, carrying "starters," canes or ropes' ends with which to start men about their tasks.

Ships often, indeed normally, sailed short-handed, and poor rations, cold, wet working conditions and the dangers of working aloft, or manhandling guns, in a pitching ship resulted in attrition through sickness and injury. In a ship cramped by stores and guns, there was no room for prisoners, and imprisonment, away from work, was not useful as punishment, holding little threat for crew and a reduced complement for the captain. The penalties for crimes were adapted from the merchant trade, where the same conditions prevailed, and were initially described as "according to the customs of the sea." They were rewritten into a code of crime and punishment by Admiral Anson in the 18th century, and the standard punishment became flogging.[185] This was carried out with the "cat of nine tails," a wooden handle to which were attached nine cords. This stripped the flesh from an area of the back at each blow, and, carried too far, could inflict mortal damage.[186] There were, inevitably, sadistic captains who inflicted flogging too often, and awarded more blows than were justified, but most captains looked to their own self-interest, awarded punishment only as necessary, and only as many blows as would permit the man to take up his duties within a reasonable period of time. Punishment was ritualized, the men being called to witness it carried out, to make the most of the example and to deter imitators.

---

[183] Lloyd, *The British Seaman*, 112-23, discusses the manning problem of the Royal Navy.

[184] Lloyd, *The British Seaman*, 124. The Press starts under William III and Anne, pp. 126-8, and has a standardized procedure by 1743.

[185] Eugene L. Rasor, *Reform in the Royal Navy: A Social History of the Lower Deck 1850-1880* (Hamden Ct.: Archon Books, 1976), 38-9, notes that the Articles of War were formalized in 1661, but revised by Admiral Lord George Anson in 1749, a version that "became notorious for its harshness."

The penalty for a number of crimes was death, the crime most feared by authority being, not unnaturally, mutiny. Although mutiny is a melodramatic topic, it was a rare event, and its causes by no means as obvious as the working conditions that prevailed normally. The mutiny on HMS *Hermione*, in the West Indies in 1797, is one of the rare events attributable directly to the unusual brutality of the captain.[187] The prevailing dissatisfaction below decks can be inferred, however, from the readiness with which the Stuart Navy went over to the Commonwealth at the outbreak of the English Civil War, and the subsequent desertion of a quarter of the Commonwealth's navy to the Royalists in 1648. When the Dutch entered the Medway in 1667, they were guided by numbers of English deserters, who taunted onlookers with a comparison of service under the Dutch and English flags.[188] In the Great Mutiny at the Nore and at Spithead in 1797, poor conditions, poor pay and the brutality of some officers were cited. The mutiny at Spithead was resolved by passage of the "Seaman's Bill," by which Parliament addressed many of the concerns, and which was supplemented by the wisdom of Lord Howe, who visited each ship in turn, explaining the terms and conditions, and undertaking the removal of unpopular officers. That at the Nore was more political, reflecting the French Revolution, and was treated more savagely in consequence, a number of men being hanged for it.

At the beginning of the period of the sailing navy, there was little difference between merchant ships and Crown ships, Drake, for example, carrying out his most famous exploits from his own ship. All ships required similar organization and direction, independently of their function. The ship therefore had its own officers, the "ship officers" who ran its various departments. These would include the master, who was also the pilot or navigator, the boatswain or bosun, responsible for the sails and rigging, the carpenter, who carried spare planking and timbers and repaired damage underway, and the purser, responsible for the stowing and issuing of stores and food. Ships mounting guns would also carry a gunner, responsible for training gun crews and for issuing powder and shot from the magazine in action. Since most of these had responsibility for stores on board, and knew the ship intimately, each from his own perspective, they would not be "paid off" like the crew at the end of each voyage, but would be retained while the ship was in harbour or dock between voyages. They were called the "standing officers," in reference to the architecture of static ropework bracing the ship and its masts, and left permanently in place, in comparison to the running rigging, the moving lines used to raise and lower spars and sails, and removed for repair or stowage when not needed. Over the course of time, these officers were appointed by warrant of the Navy Board, responsible for the supply and maintenance of ships, and in turn became "warrant officers," in comparison to the "commission officers" appointed by the admiralty. Their ranks expanded later to include specialists trained in particular areas, often at university, such as the surgeon, the chaplain and the teacher, required to teach the elements of mathematics to midshipmen, or officer cadets. The ship officers had their own quarters, often among their stores, and the other warrant officers, being gentlemen, would become warrant officers with wardroom privileges, that is, eating and passing their leisure with the commission officers. Thus warrant officers were either officers but not gentlemen, or gentlemen accorded officer status.[189]

---

[186] Dudley Pope, *The Black Ship* (Philadelphia: J.B. Lippincott Company, 1964), Appendix A, The Effects of a Flogging, 332-3. Pope made up a standard "cat," and found that it would break a one inch pine board.

[187] Pope, *The Black Ship*, contains a detailed account of the mutiny on the Hermione.

[188] Samuel Pepys, Henry B. Wheatley, ed., *The Diary of Samuel Pepys M.A., F.R.S.; Clerk of the Acts and Secretary to the Admiralty, 6 volumes*, (London: G.Bell and Sons Ltd., 1926), vol 6, 345-6.

Any ship in royal service, whether belonging to the crown or taken up from trade, had a King's officer, or fighting officer, appointed to it by commission. The commission held good for the duration of the war or voyage, and was the authority of the king to take command, assemble a crew, and to conduct the king's business. They were the fighting officers, from the tradition of filling a ship with soldiers to undertake the fighting, while the crew, including the ship officers, undertook the sailing. They were selected from the ruling classes, accustomed to command and, typically, known personally or by reputation by the monarch. These captains, holding office under the crown by virtue of the commission, were, initially, the only naval officers, other than the Lord High Admiral. Since it was unthinkable that this officer should be replaced, in the event of disease or combat, by someone not born to command, it became the practice for the captain to take aboard a lieutenant, or deputy, to step into his shoes in emergency. As ships grew larger, it became obvious that the lieutenant usefully extended the captain's span of control, and lieutenants were authorized for ships of the first three rates in 1626.[190]

Although the appointment of fighting officers favoured those born to command, as Canute had demonstrated, the sea does not comply with commands. Competence in ship handling, knowing what was possible, what was necessary, and how it could be done, gave advantages to a captain compared to one who had to depend on his ship officers to translate his wishes. It was pragmatic to take a competent captain, such as Francis Drake, and reward him for his accomplishments, rather than to teach a gentleman to command a ship. The position of the captains' lieutenants, therefore, became that of apprentice captains, and soon after 1630 the crown sought to wrest the right of appointment from the captains. This was resisted, as the right of appointment carried not only family advantages, whereby a father could secure a future position for his son, but also opportunities for patronage, whereby favours could be given and returned. It is not until 1677 that Samuel Pepys established the Admiralty's right to insist on three years sea service prior to examination, an age limit of twenty before the examination would take place, and the examination itself to determine professional fitness before eligibility for appointment as a Lieutenant.[191] Note, however, the word "appointment." Passing the examination did not make a man a Lieutenant, it made him eligible to be used as one. It was not a rank, and seniority would not be introduced until 1718. However, it was a step towards rank, and more importantly, towards professionalism. It should be noted that, while awaiting appointment as a Lieutenant, midshipmen who had passed the Lieutenant's examination often served as Master's Mate, to learn navigation, and be eligible for the Trinity House examination and ticket as a commercial Master.

---

[189] Michael Lewis, *The History of the British Navy* (Fair Lawn, N.J.: Essential Books, 1957), 15, 44, 94-5.

[190] Michael Lewis, *England's Sea-Officers: The Story of the Naval Profession* (London: George Allen & Unwin Ltd., 1939), 205.

[191] Lewis, *England's Sea-Officers*, 86.

A lieutenant with a Master's ticket was eligible to command an unrated ship, and thus to become a Lieutenant and Commander or Master and Commander.[192] This eventually became a recognized rank, that of Commander.

Pepys, by specifying an examination, excluded the illiterate among the warrant officers. The Duke of York formalized a system of Volunteers, "...one Volunteer shall be entered in every ship now going forth; and, for his encouragement, that he shall have the pay of a Midshipman, and one Midshipman less be borne on the ship."[193] These Volunteers were to learn the arts of navigation and ship handling, while gaining experience at sea, in order to qualify to sit the examination for Lieutenants. " 'Nobility' gave place to 'Efficiency,' " and that ideal was never entirely lost again.[194]

Pepys maintained a list of all officers eligible for service. By 1700, it was becoming necessary to hold qualified officers to the crown even when no ships were available for them, and the fifty most qualified captains and the hundred most qualified lieutenants were selected to be eligible for half pay when not afloat. Since pay differed by rate of ship, seniority should, also, and so Seniority Lists, the forerunners of the Navy Lists, were started in 1700. Seniority among lieutenants was recognized by their appointment, on larger ships, to First Lieutenant, Second and so on, as the complement of officers grew. The division of the crew into watches and duties enabled these officers to be given supervisory duties over part of the crew, and they became Divisional Officers, responsible for the discipline and welfare of their part of the ship's crew, in the 18th century.

Post Captains were appointed for life, with advancement solely by seniority. In many ways, it is possible to view the Post Captain, until 1864, as the true career officer of the Royal Navy.[195] Officers junior to him were vulnerable to "interest" and personal whim on the parts of their seniors for their appointments, prospects of promotion, and opportunities to serve afloat. They might languish on half-pay, retire and die still lieutenants. The step of "making post," that is, receiving a first appointment to a ship of the sixth rate or higher, became significant and irrevocable, a career milestone. Despite Pepys' requirement that an officer be twenty before being allowed to sit the examination for Lieutenant, the pressing need for the expansion of the navy for the Seven Years' War saw Keppel being appointed Post at nineteen, Howe and Cornwallis at twenty.[196] Nelson was a lieutenant at 18, a commander at 20, and a post-captain before he was 21. Michael Lewis comments that the qualification period for a Lieutenancy was "a regulation broken or evaded during the whole of the 18th century to a degree which would astonish the modern mind."[197]

---

[192] Lewis, *England's Sea-Officers*, 199. Post ships, that is, ships of the 6 rates, had both a captain and a master. By doing so the navy saved the pay of one person by having a lieutenant, who was also a qualified master, commanding an auxiliary ship (which did not carry "post" rank).

[193] Hannay, *A Short History of the Royal Navy*, 303, giving the text of a letter from James to Sir Richard Stayner, 7 May 1661.

[194] Lewis, *England's Sea-Officers*, 183.

[195] Lewis, *England's Sea-Officers*, 206.

[196] David Mathew, *The Naval Heritage* (1944: Collins, London), xvi.

The Admirals stemmed from the office of Lord High Admiral, held at the time of the Spanish Armada by Lord Howard of Effingham by hereditary right rather than naval skill, three of his forbears having served in the position. His Vice-Admiral, or deputy, was Drake. By the third day of the battle, Howard recognized the utility of the Spanish squadron formation, and reorganized the English fleet similarly, giving one squadron to Drake.[198] In the course of the English Civil War, the Lord High Admiral, as the king's representative, was on the other side, but the Commonwealth maintained the administrative office, the Admiralty, in his absence. At the Restoration, James, Duke of York and heir to the throne assumed the office, but had to relinquish it at the passing of the Test Act. As a Roman Catholic, he could not hold office under the crown, and the Admiralty has functioned with a political chief, the First Lord, and a number of service chiefs, the Sea Lords, ever since. Under the Admiralty, the Navy Board was responsible for ships and supplies, the Board of Ordnance for guns and munitions. Admirals would be appointed as needed, but relinquish the appointment when not, much as Commodores would later be appointed to command squadrons or small stations, but revert to being senior captains at the end of the appointment. The Commonwealth, under Oliver Cromwell, was the first to recognize the need for tactical command on an extended basis, creating Generals at Sea from successful Civil War land commanders.

Their first accomplishment was to implement a means of communication. Until then, a Council of War might be held morning and night, or captains told to gather by drum or bugle. There was plainly a need to establish standard operating instructions to be followed, rather than issuing fresh orders daily, and a means for communicating the instructions to be followed at a given moment. The *Instructions for the Better Ordering of the Fleet in Fighting* were issued by Blake, Monk, Disbrowe and Penn in March 1655.[199] This laid down the line ahead for engagements (Article 3), the assignment of squadrons, and some basic signals. These were designed for essentially defensive battles, primarily fought against the Dutch in the English Channel and the North Sea. They dictated the ordering and handling of large fleets, miles long in line ahead, and had as their aim the avoidance of mistakes. They laid down the manoeuvres required, and then directed the signal to be made to order them, thus fatally tying signals to instructions.

They also identified the squadrons of a fleet as the vanguard, main body, and rearguard, identified subsequently by squadronal colours of, respectively, white, red and blue. Allowing for the number of ships that might be engaged, provision was made within squadrons for there to be (in order of seniority) rear, vice and full admirals of the blue, white and red, a format that would hold as the rank structure for admirals until the 19th century.[200]

---

[197] Lewis, *England's Sea-Officers*, 86.

[198] Browne, *The Floating Bulwark*, 48.

[199] Hannay, *A Short History of the Royal Navy*, 221. Also Potter and Nimitz, *Sea Power*, 33.

[200] Lewis, *England's Sea-Officers*, 186-7. In 1864, the ranks of Admirals were reduced from ten steps to four, by dispensing with squadron colours, although Lewis observes that rank by squadron was already obsolete by 1743.

The Instructions were adopted by successive admirals with minor refinements, and worked particularly well for Admiral Rooke at Malaga, in 1704, in what was essentially a defensive battle. The *Fighting Instructions* were now adopted by the Admiralty as the *Permanent Fighting Instructions*, the only rules for battle, not to be ignored without risk of court martial.[201] Their defensive mindset prevented battles being lost, but the only opportunity for an offensive-minded commander lay in ordering the *General Chase*, freeing his ships from command to seek out individual battles. Since this was used primarily against a fleeing enemy, the best-sailed and most aggressive ships would come up against the worst-sailed or most damaged of the enemy, giving an automatic advantage. There were few opportunities allowed for an admiral to fight his fleet aggressively, or to take advantage of opportunities not foreseen in the *Instructions*.

Successive admirals approached the problem by separating the signals from the instructions, refining the signal books, and then cross-indexing the instructions to the resulting signals. By the end of the 18th century, tactical command could be exercised by the commander through signals without necessarily referring to the *Fighting Instructions*.[202] Departure from a common doctrine, well understood by all subordinates, is not undertaken lightly. Nelson's response was to seize on common abilities within the fleet, and explain to his captains his own objectives and intentions, while discussing how they could be achieved. This was a significant departure from a tradition of lonely and aloof command, and resulted in his fleet captains being called the Band of Brothers, sharing common aims and having instinctive mutual understanding. This permitted Nelson certain tactical freedoms, such as splitting his command for both Aboukir Bay, a double envelopement, and Trafalgar, an interception of the enemy line at right angles at two points. Neither manoeuvre would have been possible for an earlier generation.

The navy's place in the national strategy was limited by cost for much of the time. Ships cost much to lay down and build, and even more to equip and man when needed. The Stuart era was rife with corruption and mismanagement, both before and after the Civil War, and the crown itself was not above diverting funds meant for the navy to other purposes.[203] With this example, it is not surprising that lesser officers of the crown would follow the example. The effect on the navy's morale was to show at the outbreak of the Civil War, when the navy went over to Parliament. Although a quarter went over to the Royalist side subsequently, the Commonwealth enjoyed freedom from outside intervention. The navy did nothing to prevent the popular Restoration of Charles II to the throne, and was rewarded by being dubbed the Royal Navy. Again it did nothing to prevent the Glorious Revolution of 1688, when Charles' brother, James II, was replaced on the throne by the Dutch William of Orange, supporting the protestant heiress, his wife Mary. The navy was seen as constitutionally safe, available for use against the nation's enemies, but following the lead of Parliament in domestic matters.

A naval strategy imposed a requirement for farsightedness on the government. Once despatched, an officer's guidance was in his orders, which might be out of date before they were opened, let alone before a destination was reached. Battles could be fought, alliances made, wars declared, or fleets set sail, without news reaching the captain or admiral at sea. The government and the admiralty had to rely on the good sense and initiative of officers on their missions. The result was a tradition of command that developed and expected immense self-confidence in its responsible officers, including the initiative to respond to a developing situation, rather than expecting, let alone relying on, direction from above. Overall, the nation and its navy served one another well, in a positive feedback loop. Trade did not follow the flag, but *vice versa*, but the Royal Navy's reach not only secured the sea lanes for Britain's growing maritime trade, but could, at will, deny them to an enemy. Increased wealth meant a more robust economy, and greater taxation revenue to pay for the navy. Some of this money was spent on voyages of scientific research, exploration and hydrography. Improved charts and innovations such as chronometers benefited the nation, making the navy an asset even in peacetime.

---

[201] Dudley Pope, *At Twelve, Mr Byng Was Shot* (Philadelphia: J.B. Lippincott Company, 1962), 38-9.
[202] Potter and Nimitz, *Sea Power*, 39-41. Also Julian Corbett, *Signals and Instructions 1776-1794* (N.P.: Naval Records Society, 1909) for the evolution of signals and their disengagement from the *Fighting Instructions*.
[203] Hannay, *A Short History of the Royal Navy*, 156-8, 446-50.

The Royal Navy's strategic time came during the Napoleonic Wars. It denied France any seaborne avenues of expansion and crippled her trade. It not only enjoyed a near-monopoly of the world's trade, but could keep an army in the Spanish Peninsula supplied, creating Napoleon's "Spanish Ulcer." It could threaten a landing wherever the sea gave access, giving no peace to the conqueror of Europe. The successful conclusion of the wars was the opening of the navy's most testing time, as the age of sail ended.

Throughout the age of sail, technology evolved at a steady if sometimes rapid pace; however, changes in technology were always limited by the physical environment in which it was employed – the sea. The British sailing navy evolved from a land-based concept of war at sea being fought and commanded by soldiers in floating castles assisted by professional mariners to a concept of the warship commanded by officers who were both professional mariners and professional war fighters. This made a significant difference to the way in which the RN conducted war at sea and a new naval culture evolved from the technical and command changes that took place during the age of sail. The changes made by Pepys and others to institutionalize the professionalism of the naval commander endure in most Western navies today. And these tests of professional competence, such as the Canadian Navy's rigorous sea command qualification process, are a testament to the wisdom of those who laid down the foundations of naval professionalism.

As the RN grew in size and complexity during successive wars in the age of sail, new control methods were introduced to help senior naval commanders exercise command over their fleets and ships, especially when fighting fleet actions. A relatively centralized control structure evolved based upon various versions of the written *Fighting Instructions*, and these proved adequate for the RN's needs until the demands imposed by the truly global nature of the Napoleonic Wars and the unprecedented size of the RN led the Admiralty to endorse a new command and control framework made famous by Nelson and his "band of brothers." Nelson pioneered the concept of "shared intent" for large-scale RN actions. While in the past Captains had always been given an indication of the Admiralty's intent for missions far from home, fleet actions had been closely controlled by the directions found in the *Fighting Instructions*. Nelson, however, introduced to the RN the concept called "distributed leadership" in *Leadership in the CF*. For Nelson and his "band of brothers" this meant forging a great deal of implicit intent through various means so that the amount of explicit intent communicated through orders could be minimized. This allowed Nelson to employ a relatively decentralized command and control system that proved highly successful in the Napoleonic Wars. However, within ships, a relatively rigid hierarchy existed in which opportunities for distributed leadership were limited. Likewise, emergent leadership was not evident outside the hierarchy except in mutinies. These cultural norms of command and leadership were to change dramatically in the Second Age of the RN.

The Second Age (1860-1906) – Radical Change[204]

The Industrial Revolution was in full swing, with improvements in engine building and metallurgy. Advances in gunnery, specifically in the development of the shell gun,[205] demanded better protection for the ship, in the form of iron plates bolted over the wooden hull. These gave place to iron plates riveted onto an iron frame, then steel plates, then massive armoured steel plates. Engines were introduced to ships, first driving side paddles, but these obstructed the guns and were, in any case, unsound engineering. Soon paddles gave way to stern screws.[206] The engines themselves were initially coal fired reciprocating engines, with only low pressure being developed. Their demand for coal and poor efficiency meant that they were used for manoeuvring and in emergencies only, and a full set of sail maintained. Over the 19th century, as engines improved, sail was reduced, and more reliance placed on the engines. When ways were found to reuse the steam, through double expansion and triple expansion engines, speed and reliability won out. Although coal cost money, whereas the wind was free, the certainty of a ship under steam arriving on a specific date outweighed the cost. When that date was substantially less than under sail, the advantage was irresistible.

As the shell-firing gun had started this change, changes in gunnery forced the pace of change. Larger guns were produced, and fewer of them mounted. As the guns weighed more, the advantages of mounting them on the centreline of the ship, rather than in broadsides, appeared, and they were given swivel mounts. Mounting them on deck, rather than below decks, removed the protection of the ship's hull, and they were given armour walls, then turrets.

This thumbnail sketch of a century of complex change does not do justice to its topic.[207] The effects on the navy were even more significant. Ships no longer lasted as long. A wooden ship might be subject to rebuilding once or twice, but might last from fifty to a hundred years. New ships were being made obsolescent by technical change almost by the time that they were launched, and new flaws and advantages in naval architecture being discovered with each ship built. Consequently, it became impossible to commit to a design long enough to launch sufficient ships to constitute a class, and the homogeneity of the fleet was lost.[208]

---

[204] From HMS *Warrior*, the first armoured ironclad, to HMS *Dreadnought*, the first modern capital ship

[205] Potter and Nimitz, *Sea Power*, 241. Henri-Joseph Paixhans demonstrated the power of shell-firing guns in 1824. They were adopted by the French and the RN in the 1830s, and in 1853 they demonstrated their power conclusively at Sinope, destroying the Turkish fleet.

[206] Browne, *The Floating Bulwark*, 131. In 1843, the screw-driven HMS *Rattler* was lashed stern to stern to the paddle-driven HMS *Alecto*, of equal horsepower, and at full power towed the *Alecto* backwards at over two knots.

[207] For more detail see, for example, Admiral G.A. Ballard, *The Black Battlefleet* (Lymington and Greenwich: Nautical Publishing Company and the Society for Nautical Research, 1980).

The new guns could reach much further, in fact, by the end of the period, beyond the limits of gun-laying by eye, but were slow to reload. Small ships were not only uneconomical targets for such guns, but could attack faster than they could be tracked and hit, and lighter, breechloading guns of various calibres began to proliferate. The technicalities of coordinating the fire of a fast-moving ship against an equally fast-moving target could be overcome by shouting corrections from a single aimed gun, until effective fire could be ordered, but as the guncrews disappeared into turrets, this became impossible.[209]

Despite these problems, inevitable in a time of rapid change, this was also the time of the *Pax Britannica*, the time of Britain's acknowledged global dominance, particularly at sea. This dominance was best defended, not by fighting, but by appearing ready to do so, by flaunting its might. It was the period of "showing the flag," visiting ports around the world with a parade of impressive warships. This inevitably became a matter of ship's pride, displaying the cleanest paintwork and the most sparkling brightwork. Coaling ship was detested, not just for the physical labour, but also for the filth generated by coal dust on clothes, decks and men. Worse than coaling was gunnery practice, where centreline guns belched fire and smoke across holystoned decks, blistering paint and shaking the ship. Since ships did not compete in gunnery practice, and were not required to report their results, by the end of the Victorian period it was not unknown for the Commanders (deputy commanding officers) to report to their Captains that the practice ammunition had been expended as required, while having overseen its being dumped over the side.[210]

The status of the crew was changing as the ships changed. The navy's attitude to corporal punishment changed first, the use of "starters" being discontinued from 1809. Captain Sir Fleetwood Pellew put down a mutiny with such harshness in 1808 that the admiralty relieved him of command, and overturned his punishments. When he was appointed to the East India and China Station as an admiral, in 1853 he put down a refusal to work by sending his officers below with drawn swords. In the public outcry that followed, he was ordered home, and never flew his flag again.[211]

Public reaction to the excesses of the Press Gang in the Napoleonic Wars also had an effect. It was recognized that, although it might be necessary as a last resort, a better way should be found to man the ships. Since the navy had already started training schools, HMS *Excellent* having been committed to gunnery training since 1830, and the investment in specialized training for new ships and guns was growing. In 1852 the decision was made to include the lower deck in the Royal Navy, rather than for the commission of a ship. A career, with promotion and, at its end, a pension, now became available to all members of the RN, not just the officers.

---

[208] Browne, *The Floating Bulwark*, 200. "After twenty years of experiment, [1860-1880] resulting in a fleet in which it was rare to find two ships alike, the Admiralty took the plunge and, for the first time, ordered a whole class." This was the Admiral class, and there were six of them.

[209] Sir Percy Scott, *Fifty Years in the Royal Navy* (New York: George H. Doran Company, 1919), pp. 249-50.

[210] Percy Scott, *Fifty Years in the Royal Navy*, 85-6.

[211] Michael Lewis, *The Navy in Transition, 1814-1864: A Social History* (London: Hodder & Stoughton, 1965), 122-3.

The creation of an "all ranks" navy drew the attention of the Volunteer movement, citizens willing to train in peacetime in order to be available, with limitations on terms of service, in wartime. In 1852 the Royal Naval Coast Volunteers was formed, passing somewhat erratically into the Royal Naval Artillery Volunteers in 1873, only to be discontinued in 1891. These predecessors of the Royal; Naval Volunteer Reserve (RNVR) had been unable to convince the admiralty of their value compared to the trained sailors of the Merchant Marine who were willing to serve in the Royal Naval Reserve, formed in 1859.

The positions of the warrant officers had largely become specialist officers, or their duties had been taken on by officers choosing to specialize. The masters had become navigators, the gunnery officer was a recognized specialist, the purser was part of the Paymaster branch. The civilian officers fared similarly, the chaplain being recognized, the teacher becoming the Instructor, and the surgeon being commissioned. The bosun and the cox'n became senior non-commissioned officers, and the cook remained a cook.[212]

The officers had problems of their own at this time. Once qualified, a Lieutenant and any senior officer had a career for life, with those of the rank of Post Captain or above looking forward to a lifetime of steady promotion by seniority, whether employed or not. In the immediate aftermath of the Napoleonic Wars, 90 percent or more of officers were on "half-pay" in the reduced navy. The Admiralty introduced the concept of retirement in order to avoid the bottleneck of officers, offering promotion by one grade to officers willing to retire permanently. This enjoyed some success, but nevertheless promotion was recognized as being deathly slow throughout the 19th century. In the circumstances, it bred a sense of caution, for fear of putting a foot wrong, that was at odds with the service's expectation of initiative on the part of its officers. The sense of career was introduced in 1864, by commissioning the officer for his career, rather than his appointment. Henceforward, it would be the navy's responsibility to find full employment for its officers. In order to guarantee useful employment to these officers during what was now a career, compulsory retirement was gradually introduced, a policy of "up or out."

The ranks were also subdivided, the rank of Sub-Lieutenant being instituted below Lieutenant, and Lieutenant Commander (recognized as a Lieutenant of Eight Years' Standing in 1875, designated as Lieutenant Commander only in 1914) and Commander above it. The Admirals were reduced to Rear, Vice, and full Admiral, without squadronal flag colours, with Admiral of the Fleet at the top. The appointment of Commodore continued to be an appointment.

A major intrusion into their ranks was resented, and that was the Engineer officer. As the engines grew, in size, power and significance to the ship, so grew the responsibility and the skills needed to oversee it. Despite this, there was the continual objection that an officer should not work with his hands, should not get dirty, that such people were just "not one of us." The distinction between officers of the old navy and the new officers of the specialist branches was institutionalized in the rank insignia. Executive, or deck, officers who expected to go on to command ships and then squadrons and fleets, were granted a curl in the top row of the cuff lace denoting their rank. The braid of all others lacked the curl, and differently coloured cloth was placed between the braid to further distinguish the branches.[213] Their careers generally were capped below command level.[214]

---

[212] Lewis, *History of the British Navy*, 208.

The art of command for admirals did not advance much. Signalling became ever more complex, until 14,000 signals were contained in three large volumes, which required a staff on the bridge to read and make them. The one attempt to simplify them, by Admiral Tryon in the Mediterranean, came to grief when he issued a faulty order, causing his own ship to be rammed. His subordinates recognized the error, tried to draw his attention to the mistake before the collision was inevitable, but failed to confront him directly, believing duty to the chain of command being a higher responsibility than common sense.[215]

The Royal Navy's services to Great Britain were services to the British Empire in this period, transporting soldiers to campaigns, sending gunboats up rivers, shelling fortresses and coastal towns. It was the era of gunboat diplomacy. The navy also contributed greatly to the success of many campaigns by landing Naval Brigades in support of the army, dismounting ship's guns and improvising field carriages for them, and detailing officers and men from the large crews of fighting vessels to undertake land operations. Many medals were earned, and many reputations made, but in retrospect it suggests that there was little real need for the navy in the period, if its specialized resources could be put at risk so casually. Disarming a ship by landing a substantial proportion of its crew and guns rendered it little more than a transport, as opposed to a fleet unit. The need for supplies of coal for the ships, in contrast, forced Great Britain to develop ports throughout the world as coaling stations, and the need to secure the shortest route to India forced Britain to purchase the Suez Canal from the French, and occupy Egypt to regulate its finances and secure the hinterland of the canal. The dynamics of empire include the search for security, which means the extension of empire. In turn, this stretched the resources of the navy, as each new outpost required defence.

---

[213] This practice was copied in the Royal Canadian Navy (it was ended effective 1 January 1960), commemorated there by a "fancy waistcoat" fashioned from broad diagonal bands of the various cloths and on display in the Main Bar of the Bytown Wardroom (naval officers' mess) in Ottawa. In order of their relative status (as demonstrated by their priority in *The Navy List*), they were:

Executive - none (navy blue of uniform allowed to show through)
Engineering (E) - maroon
Electrical (L) - dark green
Instructor - light blue
Medical - scarlet
Supply & Secretariat (S) - white
Constructor - grey
Ordnance - dark blue
Special Branch (SB) - light green

[214] Lewis, *History of the British Navy*, 209. Officers other than executives could rise only to Captain, and that rarely. In 1886 the Head Surgeon received Flag status. Heads of Branches eventually rose to Vice Admiral, but no further.

[215] Richard Hough, *Admirals in Collision* (London: Hamish Mamilton, 1959), 152, evidence given in his own defence at his court martial by Captain Bourke, Flag-Captain to Admiral Tryon and Captain of (the sunk) HMS *Victoria*: "I think that no-one ever criticized the Commander in Chief as to what he intended to do. I do not know to what extent I may go, but I do not think that open criticism to one's superior is quite consonant with true discipline…"

The second age of the RN can be characterized as one where unprecedented and rapid technological change had a major impact on the culture of the navy. Nevertheless, the pace and the nature of technological change were often determined by those whose careers had been made in the age of sail. The example of a ship's appearance taking precedence over proficiency in gunnery is an example of a reaction to technology that was not uncommon in this period.[216] But the demands for the effective use of naval power eventually forced change on the RN requiring it to choose among the types of new technology available to modernize its fleet and to professionalize all members of the navy, not just the Executive, or deck, officers. The granting of career status to the ratings and the creation of specialist officer classes had a long-term impact on the culture of the RN. And naval command during the *Pax Britannica* eschewed the risks associated with the distributed leadership style practiced by Nelson and his "band of brothers," and as communications technology improved, centralized control structures, like the *Fighting Instructions*, and a culture of caution limited the freedom of action of naval commanders.

But as the 19th century and the *Pax Britannica*, drew to a close, a new age was dawning for the RN which would be strongly influenced by the past – a past that was also to shape the culture of a child of the 20th century, the new Canadian Navy.

The Third Age (1906-1945) – The Two World Wars[217]

The 20th century has seen major changes in the technology and the social structure of the navy. Two total wars, and the demands of a long Cold War, have created a pace of change and in interaction of cause and effect that require subdivision into those elements.

The early years of the new century saw a design emerge from the experiments of the nineteenth. HMS *Dreadnought*, an all-big-gun battleship, with engines fired by coal or oil, set a new standard for capital ships. Mounting main armament of a single calibre simplified ammunition supplies, and meant that the fall of shot from a single salvo could be corrected collectively. Gun aiming was refined by continuous correction for the roll of the ship, and firing distances had so increased that gunnery had to be conducted by an officer aloft, equipped with rangefinder and chart, calling corrections to the guns as he observed the shoot. This was only made possible by the introduction of electrical communications within the ship, overcoming the distances and the isolation of the various crews. The methodology would subsequently be enhanced by the introduction of primitive calculators for director firing. These would be installed in a tracking station, an intermediate command post receiving the input of the director station and the bridge and feeding them to the guns. Input included predictions of course and speed for both the ship and the target, together with allowances for wind and temperature.

Their sister ships, the battle cruisers, lightly armoured but heavily gunned, proved a disappointment. They were fast, serving as forward squadrons for the Grand Fleet, but too lightly armoured to engage safely in combat.

---

[216] O'Connell describes the US Navy's post-Civil War approach to technology as, "a wholesale and deliberate policy of technical retrogression." Robert L. O'Connell, *Of Arms and Men* (New York: Oxford Univ. Press, 1989), 213.

[217] From HMS *Dreadnought* to the dropping of the Atomic Bomb.

There were design flaws in the capital ship design, but the greatest flaw was that battleships were designed to combat one another. They were hoarded for fleet engagements, and thus could not serve other purposes. The main engagement of the First World War, the Battle of Jutland, saw battlefleets engaging one another for one hour, after which the German fleet refused action. Their cost, their relative inutility, and the blame placed on them as a contributing factor to the First World War, the pre-war Naval Building Race between Britain and Germany, resulted in them being cut back in the international agreements on the relative size of navies reached in Washington in the Twenties.

The greatest threat to the battleship was the torpedo. The torpedo's large warhead could damage or sink the largest warship. The threat of small, fast warships, torpedo boats, was sufficient for a new class of vessel, the torpedo boat destroyer, to be created. The destroyer would evolve into the workhorse of the navy, smaller and cheaper than a cruiser, armed with relatively small calibre guns, but carrying torpedoes of its own that made it a threat even to capital ships.

The vehicle of choice for the delivery of torpedoes developed as the submarine. Initially seen as coastal defence vessels, and kept small, their range was only really limited by the size of hull and fuel stowage, provided the crew could tolerate the working conditions to give it endurance. Such men could be found, and took a fierce pride in their arm of the service, called by the surface navy "The Trade."[218] No real defence could be found against them, until the hydrophone, a listening device lowered into the water, was refined into Asdic, which emitted a short, sharp sound, a "ping," and listened for echoes reflected off underwater surfaces.[219]

The sailors had become workers in floating factories. Their duties were now confined to narrow specializations and specific skillsets, defined by their trade badges. They were divided and subdivided into crews, but, sealed into working compartments, they had little knowledge of what was occurring outside their part of the ship. Gun captains protested at the introduction of director firing, when yet another responsibility was mechanized, but naval warfare was exceeding human abilities, and the art of the gunner was being replaced by the science of ballistics. The exchange of fire at Jutland would take place at ranges of ten to 15,000 yards, and central direction was essential to incorporate all the factors affecting fall of shot.

The supply of men was better assured, through the Royal Naval Reserve (RNR), merchant seamen willing to serve in the Royal Navy if required, and the Royal Fleet Reserve (RFR), retired sailors willing to return to the service. The creation of the Royal Naval Volunteer Reserve (RNVR) in 1903 provided access to civilians willing to train in their spare time and give their services in wartime, in return for the honour of wearing naval uniform. The navy was slow to take up the offer, using the RNVR in the First World War primarily as infantrymen in the Royal Naval Division (RND) at Gallipoli and in France. After the First World War, the RNVR was recognized as the flexible tool of expansion that it could become, and was not only given greater training support, but included more constructively in naval planning.[220]

---

[218] There is a slur implicit in the term, since being "in trade" was considered ungentlemanly in the Victorian or Edwardian eras in Britain.

[219] ASDIC, later changed to the American term SONAR for compatibility in NATO, was developed experimentally during the First World War but only introduced in the Fleet in the 1920s.

The major component of the Royal Navy, the Grand Fleet, spent most of the war in Scapa Flow, waiting for the German High Seas Fleet to come out to battle. The morale of the sailors did not sink to the levels that made the Russian Navy mutiny and contribute to revolution, or the German Navy, which followed a similar course, although with less violence and less success. The one significant incident of indiscipline came after the war, the Invergordon Mutiny of 1931. When the Treasury appeared to renege on commitments to levels of pay, and the Admiralty failed to protest effectively, the sailors of the Atlantic Fleet refused to sail. This was more in the nature of industrial protest than mutiny, and it was resolved as such, the Treasury backing down on most of the proposed measures.

The torpedo was of great significance to junior officers, offering the opportunity for small craft to become giant killers. Officers and men on destroyers and submarines were more intimate than on cruisers and battleships, and could function more as a team. The demands on junior officers increased with the responsibility of command came earlier in small craft, and in submarines particularly, this was reflected in a specialized command course, the "Perisher." Since the captain of a submarine was the only person aboard to see the enemy when submerged, candidates for command were trained in attack solutions. This was imaginative training, every attempt being made to create realism and to generate the stress of combat conditions. It progressed from classroom to attack simulators, to dummy attacks from real submarines against tame surface craft. The failure rate was sufficiently high to accord the graduates a measure of self-confidence and to assure their crews of the competence of their commanders. This was revolutionary in officer training, and a far cry from the steady progression of the officer's career in earlier times.

Officers were required to pass part of their career in big ships, as senior command would require an understanding of the fleet in all its dimensions. There were also officers who made their careers in big ships. Extended service in capital ships was seen by small ship officers as contributing to a greater divide within the navy, the officers becoming technical experts in their departments rather than refining their leadership skills in their divisions.[221] Seen as communities, the major units reflected the steadiness, confidence and also the class divisions of Edwardian society, whereas the smaller ships were engendering the more democratic influences of mutual dependence, and cooperation rather than command and control in its more authoritarian forms. The two most significant British naval commanders of the Second World War, Admirals Cunningham and Horton, would have careers identified with small ships, destroyers and submarines respectively.

---

[220] J. Lennox Kerr and Wilfred Granville, *The R.N.V.R.: A Record of Achievement* (London: George G. Harrap & Co, Ltd, 1957), 79-89, 121-35.

[221] Viscount Cunningham of Hyndhope, *A Sailor's Odyssey* (London: Hutchinson & Co. Ltd, 1951), 150: "…many of the officers had fallen out of touch with, and were mostly ignorant of, the problems and difficulties affecting the men in their home lives. This applied particularly to the senior officers and the officers in big ships. …The reason for this detachment in the bigger ships was not self-evident; but it may have been that the officers were so involved in *materiel* and 'instrumentalism of every kind', …that the human factor was neglected. In short we had excellent technicians but few real leaders of men."

Social divisions between officers within the navy continued, the specialized branches being distinguished by the coloured backing to their gold lace (described in footnote above), RNR officers by entwined narrow lace and RNVR officers by undulating rather than straight lace. Entry into the Royal Navy was still by recommendation for a cadetship, and selection by interview and examination, but cadets were, essentially, fee-paying boarders at a Public School (in the English sense, i.e., a private school) run by the navy. This process served as a filter, preserving the homogeneity of the officer corps at the expense of the social diversity of a meritocratic democracy.

The greatest shock to the career of the naval officer came after the First World War. The expansion of the navy during the war had required large numbers of officers, who had been commissioned directly into the Royal Navy. The retrenchment at the end of the war resulted in the forcible retirement before their time of serving officers of all ranks, in what was called, and bitterly resented as, the "Geddes' Axe" after the First Lord.[222]

The command of the navy in this era started with a figure evocative of an earlier one, Admiral Sir John Fisher. Argumentative, opinionated and ruthless, he forced a rationalization on the navy, retiring large numbers of ships that he considered worthless and building to a standard design of big ship. Recognizing the threat from Germany, he reorganized the navy, creating the massive Grand Fleet in home waters to prevent the German High Seas Fleet entering the Atlantic. His reforming zeal was not unopposed, and not entirely good. He intended reforms in the cumbersome and archaic signalling systems of the navy, but was never able to accomplish them.[223] He tried to effect a *rapprochement* between engineers and executive branch officers, through the Selborne Scheme of naval education, but did not overcome service prejudices.[224] He was opposed to a naval staff, being disinclined to delegate, and when a staff was created, after his departure as First Sea Lord, it lacked the time to gain experience before the First World War.[225]

This was doubly unfortunate, as the navy had an energetic but undisciplined First Lord, Winston Churchill, at the time the war started. Wireless Telegraphy (W/T) made global communication possible, and the First Lord interfered in naval operations in progress. The result, in a service unaccustomed to questioning orders, was the unfortunate interpretations of orders that resulted in the escape of the German cruiser SMS *Goeben* in the Mediterranean, and the annihilation of Admiral Cradock's weak squadron off Coronel.[226] Other difficulties with the staff would be overcome as experience was gained, but it would be in the next war that the staff could be considered effective.

---

[222] Cunningham, *A Sailor's Odyssey*, 112.

[223] Peter Kemp, *From Tryon to Fisher: The Regeneration of a Navy*, in Gerald Jordan, ed., *Naval Warfare in the Twentieth Century 1900-1945: Essays in honour of Arthur Marder* (London:Croom Helm, 1977), 28 and 28n.

[224] Lewis, *The Navy in Transition*, 152: "…social like tended to consort with social like, and one very seldom hears of an executive lieutenant, say, contracting an enduring intimacy with a purser, a master, or a naval instructor – and still less with an engineer. Social class remained paramount throughout the period [1814-1864]." Although not as strong, this attitude persisted, and would persist until the Second World War.

[225] Patrick Beesly, *Very Special Intelligence: The Story of the Admiralty's Operational Intelligence Centre 1939-1945* (London: Hamish Hamilton, 10977), 6 quotes from a post- First World War paper on intelligence, "Naval Traditions and Naval Intelligence": "It began by questioning the fitness of the Executive Officers of the Navy for intelligence duties. 'He is a man of action and never at a loss. He must make up his mind on every occasion instantaneously and without hesitation, and he must be prepared to take on *any* job at a moment's notice. Now just in those characteristics lie his strength and his weakness. They make him the finest ship's officer in the world, but they render him unsuitable for work that requires administrative, organizing…or reflective capacity, and what is more the *prevent him from realizing that there is any kind of work that he cannot do*."' [emphasis in the original text]

Signalling at sea still relied on the cumbersome flag signals of the Victorian period, W/T being too slow for tactical manoeuvring at sea. Difficulties in making or reading signals were responsible for missed opportunities on a number of occasions. There was, in addition, a lack of initiative on the part of Grand Fleet captains, accustomed to receiving orders, and reluctant to make signals upwards in the chain of command, that was also a contributing factor.

Although the navy fought no decisive battles in the First World War, its great contribution was the distant blockade of Germany. The maintenance of the Grand Fleet as a fleet-in-being neutralized the High Seas Fleet, although the reverse was also the case. A side effect was to free the rest of the Royal Navy to strangle the seaborne trade of the Central Powers. This contributed significantly to the domestic collapses of the German, Austro-Hungarian and Turkish Empires. Although the strategy was effective, it was slow, and the cost of the war in blood and treasure was unnerving to the politicians. An unanticipated effect was the German resort to *guerre de course,* or merchant raiding, using submarines in asymmetric warfare. This resulted in significant losses of merchant shipping, and the British threat to treat U-boat commanders who were guilty of torpedo attack without warning as pirates was ineffective. The absence of a means of detection or of counter-attack until hydrophones and depth-charges were introduced was the cause of much criticism. Massive mine barriers were laid at choke points, particularly in the English Channel and between Norway and Scotland, but without significant effect. It was only the reintroduction of convoys that brought losses down to acceptable levels, one of the principal lessons learned from the First World War.

That war was responsible for forcing increased democracy on Britain, women being given the votes and restrictions on the male franchise being reduced after the war. In an increasingly democratic nation, public revulsion at the loss of life, and political despair at the financial costs of the war created an anti-militaristic climate that extended to the navy. With the three significant enemies of the First World War removed from the board,[227] and with the pre-war threat of Russia neutralized, Britain was happy to agree with the USA that future naval races should be prevented, drawing up a table of limits on ships and their sizes that, most significantly, saw Britain agreeing to parity between the RN and USN, and allowing Japan three fifths of the power of either.

The Washington Agreements prevented new building in certain classes of ships except for intermittent and regulated instances. This dovetailed with the Treasury's imposition of a Ten Year Rule, that stated that for planning purposes, there would be no major conflict for ten years. This subsequently became a rolling forecast, not lifted until the rise of the Nazis in Germany. Since it applied to all three services, when it was lifted the RN had to compete for budget with the pent-up demands of the other two in an economy still in recovery from the First World War and from the Depression.[228]

---

[226] Richard Hough, *The Great War at Sea 1914-1918* (New York: Oxford University Press, 1983), 84: "Churchill, with his need to dominate everything, rapidly became heady with the power W/T offered."

[227] The German Empire, the Austro-Hungarian Empire and the Ottoman Empire.

By the time of the Second World War, much organizational planning had taken place, but little building. Much of the expenditure had been on rebuilding and upgrading existing ships, and a lot of effort had been expended on planning convoys. Convoy escorts, based on the design for a whaling ship, and called corvettes, could be built quickly and in large numbers, and became the workhorses of escort groups.[229] Convoy escorts would be led by an escort commander, typically a regular officer in a destroyer. Destroyers were, once again , the workhorses of the navy, and numbers were lost in the early years of the war, in the Norwegian campaign, in the withdrawal from France, and in the Mediterranean. Although capital ships were not hoarded as closely as in the First World War, there being no concentrated German threat, they were retained for escort duties where there was a threat of a German raider, particularly one of the pocket battleships, threatening convoys.

Aircraft proved to be the greatest threat to the capital ship, and Pearl Harbour saw the battleship's place at the top of the naval hierarchy taken by the aircraft carrier. The introduction of radar gave warning of aircraft, but also extended the ship's vision at night and in fog. It was also an accurate means of target acquisition, although multiple sets were required for different purposes in ships. The introduction of radar capable of working in the centrimetric waveband permitted discrimination of small targets, such as periscopes. Radar input was fed into the Plotting Room, which coordinated all information received into a general plot for ship and command usage.

The small ships of the escorts underwent evolutionary development in the course of the war, particularly in the Battle of the Atlantic. German U-boat tactics had been refined into an equivalent of fleet action, in anticipation of merchant ships being convoyed. Multiple U-boats would extend in a patrol line, reporting their positions to their headquarters ashore. When any of them sighted a convoy, all would gather at a rendezvous directed from shore, and conduct a mass attack. Escorts were given improved detection equipment, particularly radar, improved weaponry, and improved support, such as auxiliary refuellers, Very Long Range aircraft support and merchant aircraft carriers.

In the Second World War the RN became a large navy of small ships, with a core of pre-war big ships. Although there were exceptions, such as HMS *Glorious* and HMS *Hood* (both sunk in surface actions by German warships), the threat to ships came from the air or from submarines for the most part, rather than from surface action.

The initial expansion of the RN absorbed the prewar navy, the RFR and RNR, and the trained and skilled members of the RNVR. After that, volunteers and conscripts were enlisted as hostilities-only personnel through the RNVR, giving them an abbreviated training, and assigning them to a ship. This was feeding a lot of raw men into small ships, where they had to learn fast to become an effective team. The navy also fostered teamwork, creating HMS

---

[228] Paul Kennedy, *The Rise and Fall of British Naval Mastery* (London: Fontana Press, 1991), 323, 328-9, 336-43.

[229] Joseph Schull, *The Far Distant Ships: An Official Account of Canadian Naval Operations in the Second World War* (Ottawa: Queen's Printer, 1952), 27-9.

Western Isles to work up escorts. New ships would be sent to Tobermory for ten days, where a continuous round of exercises would overlap, placing great demands on the crew's ability to react, at short notice, to unusual demands, some of them conflicting. At the end of ten days, all being well, areas needing work would be identified, deficiencies addressed, and the escort would depart with a spirit of mutual dependence and cooperation.

The cross-section of the nation enlisted did not always separate out socially, in the traditional way, as enlisted men and officers, and some of those socially eligible for commissions lacked the ability or sometimes the commitment to obtain one. In an increasingly technical war, the enlisted specialist assumed a more significant and respected role, particularly radar and asdic operators. "In a sub hunt, the directing officer sought information from this rating, passed an instruction to that one, listened to a caution or a suggestion from another. All were engaged in a common effort to resolve an urgent problem..."[230] Serving in small ships, primarily, there developed an easier intimacy between all ranks, encouraged in the first half of the war by the sense of being beleaguered, and in the second half by the growing expectation of victory.

This was made easier by the proportion of RNVR officers in the navy. Most of the temporary officers were granted commissions through them, and the RNVR constituted more than three quarters of all naval officers, by war's end. Commissioning from the ranks, based on skills and abilities, became more common, and 33,000 officers came from the lower decks.[231] The disadvantages of distinguishing between RN and RNVR officers made itself apparent in the Engineering Branch, and it became the practice to grant Engineering Officers in the RNVR the straight lace of the RN to ensure that they would be obeyed by the crew.[232]

All officers were learning a new way of war as they went along. The RN had placed too much faith in asdic, not recognizing or researching its weaknesses before the war. Escort tactics had to be developed, to ensure the maintenance of contacts, and to maintain attacks. It became the practice to ship a Senior Officer aboard the Escort Leader, in addition to the Captain, to take command of attacks. These would be commanded from a Plotting Room, or "The Plot," which maintained a log and charts of contacts and attacks. In this way attacks could be maintained until a submarine's endurance was exhausted, and it was forced to surface, when it could be destroyed. This forced Command and Control down to a relatively low level, where it became cooperation and coordination with a common goal. Voice communication, or radiotelephone (R/T) replaced signal bunting and W/T as the preferred means of control, giving greater immediacy and less opportunity for misinterpretation. Officers became dependent on radar, in particular, as it gave warning of aerial attack, periscopes or conning towers of submarines, and also simplified station keeping on convoys as well as navigation close to shore.

Senior commanders recognized this, and scientific research and development was given a high priority. The admiralty benefited, also, from prewar success in code breaking and signals intelligence, and used enemy transmissions to locate them and to forecast their actions. To maintain the security of these sources, command was increasingly exercised from shore when possible, where information could be received by landline or courier.

---

[230] James B. Lamb, *The Corvette Navy: True Stories from Canada's Atlantic War* (Toronto: Macmillan of Canada, nd), 17.

[231] J. Lennox Kerr and David James, eds., *Wavy Navy by Some Who Served* (London: George G. Harrap & Co., 1950), 256.

[232] J. Lennox Kerr and Wilfred Granville, *The R.N.V.R*, 253.

Additionally, the Admiralty sought assistance on military matters from civilian scientists in Operations Research, who made recommendations on topics such as convoy size, the altitude of aerial attacks on submarines and the depth settings for depth charges, and the fuselage colour of planes in Coastal Command.[233]

The scope of the war at sea and its joint and combined nature placed the responsibility for a great deal of liaison on the Admiralty. It was coordinating Combined Operations with the other two services, providing its normal function of transport and defence to the Army, cooperating closely with the Royal Air Force, not only through Coastal Command, but also in air-sea operations off the French coast and in the Mediterranean. There were a number of foreign and Commonwealth vessels serving within the Royal Navy, and RN ships serving under American command. There was also the question of cooperative and joint operations with the American, Australian and Canadian navies in particular. Although, inevitably, there were bruised feelings on occasion on both sides, it says much for the flexibility of the RN at all levels that operations were as successful as they proved to be, not only in the Atlantic, but also with the seaborne invasions of Africa, Sicily, Italy, France and the Pacific campaign.

The commitment of senior officers in the navy can best be summed up in a statement attributed to Admiral Cunningham, when asked to consider the suspension of the evacuation of the Army from Crete in the face of mounting losses: "It takes the Navy three years to build a new ship. It will take three hundred to build a new tradition. The evacuation will continue."

The British government, under the direction of Winston Churchill, prosecuted the war ruthlessly on all fronts. The shelling of the French fleet in North Africa, to prevent it falling into German hands, and the hunt for the *Bismarck*, are examples of the determination of the government to prevail at sea. It was also willing to endure losses for strategic purposes, not only in the Atlantic, but in the Arctic convoys to Russia, and in the supply of Malta in the face of constant, heavy aerial attack. Although sufficient forces were maintained to cover the German raiders, there was a willingness to risk ships in battle. It was plain that the dominance of the Royal Navy at sea was ended, however, and that the future lay not in the Empire, or its rump, the Commonwealth, but in alliances, principally with the United States.

The first half of the 20th century witnessed the paradox of some stability in major warship types, permeated nonetheless with the continued evolution of naval technology at a rapid pace, creating opportunities for some and obstacles for others. The changes in the RN influenced by technology could be seen at both the ship and admiralty levels.

On one hand, in the environment of larger ships, sailors became workers in floating factories with their duties increasingly specialized compared to their forebears in the age of sail. Working in small groups, they became more and more isolated from their shipmates and focused on their specific tasks. On the other hand, new technology, especially torpedoes, was exploited by the RN as it became a large navy of small ships during the Second World War.

---

[233] P.M.S. Blackett, *Studies of War: Nuclear and Conventional* (Edinburgh: Oliver & Boyd, 1962), 205-33.

This small ship environment affected the work of crews in that there was less specialization and sailors were less isolated from their shipmates.

The two work environments, large and small ship, created a dichotomy of command cultures in the RN of the first half of the 20th century. In the major units of the fleet officers used more authoritarian forms of leadership and more centralized command and control methods to exercise command over their large crews. In the small ships with their smaller complements, however, teamwork and cooperation, the hallmarks of the navy in the future, were the norm. The dichotomy also applied to leadership experience as officers who spent most of their careers in large ships tended to focus on specialist technical skills to the detriment of leadership roles, while officers who spent most of their careers in small ships, with earlier command opportunities, were less specialized but acquired more leadership experience. One could argue that in small ships, officers and petty officers needed to rely more on personal power (e.g., expert, referent, and connection) than on the more traditional position power (e.g., reward, coercive, information, and ecological) employed in large ship command hierarchies.

Another characteristic of shipboard leadership and command culture in the first half of the 20th century was the increased prominence of emergent leadership seen in the roles taken by specialist non-commissioned officers and ratings, especially the radar and Asdic operators. This trend was magnified by the culture of the small ship environment, which valued the co-operative characteristics of expert teams as opposed to the more rigid hierarchies of the large ship environment. The influx of civilians into the RN, particularly during the Second World War, also favoured the acceptance of emergent leadership by those with expert power, paralleling the same phenomenon in a British society in which leadership was becoming less hierarchical and less class-based.

At the admiralty level, the increased communications capabilities developed in the 20th century allowed flag officers ashore to institute increasingly centralized command measures based on their ability to exercise command through more sophisticated control structures. This reduced the effectiveness of the RN in the First World War when the new centralized control capabilities, like W/T, reinforced the dominant large ship cultural norm of deference to higher authority to severely restrict the inclination of fleet commanders and captains to exercise their initiative. During the Second World War, despite capabilities to exercise more centralized command and control due to improved communications technology and with more concerns about communications security, captains exercised more initiative. This phenomenon was caused by the rise of officers from the small ship navy into positions of senior command and the environment in which the growing small ship navy operated. These officers came from a culture that valued initiative and they increasingly dominated RN command positions. This cultural shift was reinforced by an environment where many small ships scattered on operations around the globe made centralized command difficult and made distributed leadership based on cooperation and coordination an effective way to conduct operations.

The joint and combined nature of the Second World War accelerated the trend begun in the First World War of the RN relying on increasingly larger and more sophisticated staffs to assist commanders ashore in the exercise of their command.

The Fourth Age (1945-present) – The Modern Navy[234]

The end of the Second World War brought two new conditions of warfare, the nuclear era and the Cold War. Conventional warfare on a large scale became unlikely, and with that realization the last justification for battleships in the RN died. The aircraft carrier initially took their place, with its longer reach both at sea and inland, and its flexibility in both naval fighting and in support of landings. The advent of the nuclear submarine and submarine launched ballistic missiles subsequently put the submarine at the forefront of naval strategy for the purposes of nuclear war.

Britain's vulnerability to submarine warfare in two world wars, and the threat of enemy submarines launching missiles against Britain, made anti-submarine warfare a high priority. Sonar (as asdic was renamed, for compatibility with the US) was progressively improved through variable depth sonar and towed arrays, sonobuoys, and aerial surveillance systems such as magnetic anomaly detection. At the same time, radar was enhanced further, for both surface and aerial warning systems. The detection and tracking of high speed attacks by missiles or aircraft required close coupling of radar and weapon systems, and miniaturized electronics permitted computerization of, first functions, then systems. There was, in consequence, a boom in electronics in the navy, and the coordination of the reporting of multiple systems meant collocation of them, the erstwhile Plot becoming the Operations Room.

The effect on the lower deck was to create a breed of electronics specialists who were the eyes and ears of the ship. Within limitations, they would function autonomously, time available in wartime not permitting the leisure of reporting, deciding, ordering and executing in response to threat detection. A new style of command was introduced, "Command by Negation" was introduced, in which they were free to follow standard operating procedures in a combat situation, to shorten the decision loop, unless an officer overrode a course of action.[235]

Most early electronics were analogue devices, where results were interpreted, rather than being unambiguous. They were also bulky and expensive. Operating them was an art form, and the output had to be plotted manually. Thus a radar intercept would be recorded in grease pencil on perspex, each intercept being recorded to track its path, information being added as it became available. Skilled sonar and radar operators were highly prized, and could expect recognition and promotion for their aptitude. As electronics developed from analogue to digital devices, and became smaller with the introduction of solid state technology, so they also proliferated and grew more complex, and their operators maintained their special status.

Although we are almost in the age of autonomous, fully automated weapons systems, there is still the opportunity for the competent sailor to make his contribution. Equipment failure, combat damage, inadequate programming and Murphy's Law all make it inevitable that, when most needed, technology will fail, be inadequate or, worse, be misleading. The trained human can repair, reprogram, supplement, replace or ignore the errant component.[236]

---

[234] From the dropping of the Atomic Bomb, through the Cold War, to the present day.

[235] Admiral Sandy Woodward with Patrick Robinson, *One Hundred Days: The Memoirs of the Falklands Battle Group Commander* (Annapolis: Naval Institute Press, 1992), 10, 317.

At the end of the Second World War, Britain voted overwhelmingly Socialist. This political swing represented a desire for change in the organization of society, and inevitably had an impact on the officer corps of the navy. Large numbers of men had been commissioned from the lower deck on their merits, without ill effect, and it was set down as a target that in future one quarter of the officers should be commissioned in this way. The age of entry as a cadet was raised to school leaving age, and fees were abolished, changing the status of HMS *Britannia,* the training establishment, from Public School to service academy. The "Wavy Navy" distinguishing rank braid of the RNVR was altered to straight braid, and the coloured backings to the lace for Branch officers was abolished, significant and almost revolutionary changes in a nation as sensitive to nuances of dress as Britain.[237] Although the navy continued to be an organizational hierarchy, internal social distinctions were reduced in the interests of establishing service unity.

Command and Control within the Royal Navy has adapted ancient traditions to electronic capabilities. The commander's tools are now the displays of the Operations Room, and the extensive communications nets within and between vessels.[238] The new formulation, Command, Control, Communications, Computers and Intelligence, or C4I, depends on compatibility with American systems in communications, computers and intelligence to make it feasible. Incompatibility in communications, and particularly encryption, or processing capability, or lack of access to the range of intelligence available to the USN, would make it difficult or impossible to work in the network-centric world towards which USN doctrine is progressing, and perhaps impossible to operate in any context whatsoever without American agreement. The extent to which this will change the capability and self-image of the RN as a service and as a career is yet to be determined.

The Dominions, traditionally, had used the Royal Navy as a training environment, particularly for officers, to obtain experience not available in the constrained environment of the smaller navies. The RN, however, had developed into not only a professional environment, but a cultural and social academy, producing officers and ratings who would fit, without argument or hesitation, into its own mould. This mould favoured the executive officer over all other officers, and the officers as a class within the navy, to a degree that was becoming unacceptable politically outside Great Britain. The Australians had reacted nationalistically against RN discipline imposed by RN officers on Australian ratings in HMAS *Australia* in 1919, provoking the comment: "If that is the spirit to be exhibited by the Imperial officers who come out here to command our Navy, the sooner we end it the better, and the more quickly we put them in their place the better…"[239] Some Canadian officers indoctrinated too thoroughly by the Royal Navy, found this bias in their favour entirely satisfactory, but following the well-reported disciplinary incidents in the post-war RCN, the "Mainguy

---

[236] Woodward, *One Hundred Days*, 67, "…despite the massive investment in modern, partially automated systems (indeed, because of them), in the end it is people that still count."

[237] Captain S.W.C. Pack, *Britannia at Dartmouth* (London: Alvin Redman, 1967), 264-67.

[238] Woodward, *One Hundred Days*, 9-10.

[239] David Stevens, *The HMAS Australia Mutiny, 1919*, in Christopher M. Bell and Bruce A. Elleman, eds., *Naval Mutinies of the Twentieth Century: An International Perspective* (London: Frank Cass, 2003), 138, quoting Senator Pratten of Australia.

Report"[240] set the direction for a Canadian navy that would preserve the distinctions of rank and discipline, without imposing unnecessary divisions within the RCN based on the importation of a foreign attitude to class distinction.

The RN had long enjoyed a position of pre-eminence among the Commonwealth navies that would, on occasion, see officers in those navies put the interests of the Royal Navy ahead of the interests of their own country.[241] That era was now, effectively, over. Although the RN would be recognized as the most significant, and the senior, navy within the Commonwealth, it could no longer expect the automatic subordination of Commonwealth navies to its orders. Instead, it looked to the explicit and implicit alliances of the United Nations (UN), the North Atlantic Treaty Organization (NATO), and the South East Asia Treaty Organization (SEATO).[242] Its automatic assumption of command authority within Commonwealth circles would become an irritant, and seen as arrogance by navies no longer accepting apron-strings.

The senior command of the Royal Navy has had to adjust to these changed circumstances in unprecedented ways. Although the navy had partnered with foreign navies in the past, Britain had always been the dominant partner. In the Cold War in general, and in the Korean War in particular, the RN has had to adjust to the status of a member of an American-led coalition. It has not always done so gracefully, and relations between the two navies in the Mediterranean at the time of the Suez invasion were terse, until Britain backed away at the political level, and withdrew. Apart from that, the Royal Navy has been happy to follow American tactics and doctrine, dependent on them for their lead in technology and their superiority in equipment quantity and quality, particularly their nuclear arsenal which was the backbone of the strategic thinking of the non-communist world. So far, that leadership has continued into the post-Cold War era.

The real change for the navy has been in the degree of civilian control. The entry of the USN into the Second World War meant that the RN had an equal partner with less experience, but American production soon made the USN the dominant partner in the Pacific and one not to be taken for granted in the European Theatre. The retreat from Empire by the British, the emergence of the USA and the USSR as the two superpowers, and the advent of the Cold War left the USN as the lead in the partnership. This meant a juggling of roles. Britain sought to maintain its leadership role in the Commonwealth and in its own foreign policy, while assuming a leadership role as a European member of NATO. It nonetheless had to acknowledge a secondary and conformist position to the USN in the global Cold War.[243] Britain had finished both the First World War and the Second World War as a debtor nation of the USA, and the attempt to maintain its independence after the Second World War in research and development soon ran up against the high costs of an independent path, with little justification. The American lead in nuclear weaponry, in particular, made it at first the leader, and then the dictator of Western strategy, excepting the minuscule French *Force de*

---

[240] *Report on Certain 'Incidents' Which Occurred on Board HMC Ships ATHABASKAN, CRESCENT and MAGNIFICENT and on Other Matters Concerning the Royal Canadian Navy* (Ottawa: King's Printer, 1949), named after its chairman of the board, Rear-Admiral Mainguy.

[241] Stacey, *Arms, Men and* Governments, 308-309.

[242] B.B. Schofield, *British Sea Power: Naval Policy in the Twentieth Century* (London: B.T. Batsford Limited, 1967), 218-19.

[243] Schofield, *British Sea Power*, 219-22.

Frappe. Britain, politically, recognized the relationship, and then acknowledged it, adopting the technology of American nuclear submarines and missiles as the strategic arm of naval power. This removed the principal naval strategic capability from naval control, as the authority to launch nuclear weapons could only come from the civilian authority. At the same time, conventional naval forces are now so tied to either alliances or strategic balance that the independent use of them is, if not unthinkable, at least questionable. The task force that retook the Falkland Islands worked with the tacit support and the covert assistance of the Americans, and even so balanced at times on a knife edge. Rules of Engagement, and even tactical decisions, such as the sinking of the *Belgrano*, had to be authorized from Britain.[244] The limits of Britain's strategic reach were seen in the tenuous, complex, refuelling arrangements necessary to enable a strike by strategic bombers of the RAF in support of the invasion.

On the other hand, Britain has faced down the Spanish, Dutch, French, French and Spanish combined, and German navies in the past. The increasing commoditization of electronics, the tendency to buy Off the Shelf, and the commercial utilization of space technology, could all mean that the American lead is not insuperable. At that time, the natural and evolutionary growth of command and control may come to mean more than management theory. The traditional hierarchy of the service wedded to the more democratic social flattening of functions within the ship's crew may lead to the easy teamwork of a Drake, rather than the subordination of man to systems technology.

From a command perspective, as we have seen, emerging CF doctrine tells us that the command attributes of the "warrior-technician" of the Second World War and Cold War eras now need to be "supplemented with the skills of the soldier-diplomat." Lessons from naval history could be instructive in this regard as during eras of relative peace, such as during the *Pax Britannica*, naval officers were often required to exercise their diplomatic skills as representatives in foreign waters of their governments.[245]

A new style of command, developed from the growing acceptance during the Second World War of emergent leadership styles, known as "Command by Negation" has been used to describe the phenomenon of increased responsibility being granted to technical experts, initially among warships' crews, but from there increasingly dispersed up the command chain. Perhaps "Command by Negation" is one side of the coin while the other is the recognition of the value of emergent leadership among certain ratings and subordinate commanders whose expert and information power allowed them to assume leadership roles traditionally reserved for the officers and senior petty officers (within a ship) and senior commanders (at the higher formation level). In the late 20th and early 21st centuries, the increased use of fully automated systems, with no humans in the decision loop, puts another face on "Command by Negation" that needs to be explored more fully.

The historical development of the Anglo-American Command style shows that the elements of environment-technology-culture triad not only interact among themselves, but also affect the nature of command and leadership over time.

---

[244] Woodward, *One Hundred Days* 67, "I was also well aware of how carefully you must study the ramifications of your Rules of Engagement, remembering they have been drawn up jointly by both politicians and the military."
[245] *Leadership in the CF*, Intro-4.

Section 4: Environmental, Technological And Cultural Determinants Of Canadian Naval Command Styles – An Historical Perspective

The command styles practiced in the Canadian Navy are a direct result of our nation's accepted role as a "middle power" of modest resources but committed to an active international involvement generally in partnership with a global power. Although the terminology may have changed over the century of the Navy's existence, the fundamentals remain remarkably the same.[246] The Navy has always been at the forefront of technological change, but it has had to manage this within a context of restricted budgets and manpower ceilings. The over-riding concern has been how to maintain a degree of independence from the dominant world power (formerly Britain, and now the United States), and yet achieve an operationally useful level of interoperability with those forces while maintaining a distinctive Canadian identity. The challenges to command are no easier in 2004 than they were a century ago – and hence the styles adopted to manage them have developed in an appropriately sophisticated fashion.

For the sake of simplicity, command in the Canadian Navy, as with practically all other navies, is practiced at three essential levels: the strategic level (ashore headquarters, sometimes referred to as "admiralty" after the British practice[247]), the operational level (ashore headquarters and higher formation level at sea, such as a task force with theatre responsibilities), and the tactical level (the individual ship unit or small groupings, generally now referred to as the "task group"). Although it is a truism that all navies share many things in common, ranging from the environment upon which they operate to the weapons with which they are equipped, those factors also can be the source of differences: the tropical archipelagic waters upon which the Indonesian Navy operates, for example, demand a different type of vessel than the open-ocean sub-arctic areas off of our coasts; and the riverine vessels of the Ecuadorian Navy carry much smaller-calibre weaponry than our mostly larger vessels, and have no need to counter air or submarine threats. Such factors as the size of vessel and complexity of weapons systems therefore must be important determinants of command. However, the specific nature of those relationships remains an area that has not yet received much scholarly attention, and it is beyond the scope of this study to attempt. What this study will endeavour is to identify why the Canadian Navy has tended to adopt specific ship types and weapon systems, and the implications for its command styles. Another of those common truisms is the nature of command itself. Although all navies (and armies and air forces also) are "commanded", they are not all commanded alike. Again, the differences are in the details: while it should seem axiomatic that navies stemming from a democratic tradition should practice a different form of at least higher-level command than very centralized totalitarian systems, such as in the Nazi German *Kriegsmarine* or more latterly the Soviet Navy, this factor too has received little scholarly attention. Such analysis also is beyond the scope of this work, but a useful starting point would be the notion that different societies will produce different navies, which ostensibly will employ different command styles. One recent popular account edges into this territory by making the specific point that "maritime powers have always prevailed over land-based empires… revealing the way in which supremacy at sea freed thought and society itself."[248] Since the author's aim was to distinguish the Anglo-American navies from those of the empires of continental Europe, he includes no detailed assessment of different command styles, other than to infer an Anglo-American commander's greater scope for independence of action. Although hardly scientific, it is no great leap to postulate that the general principles can be extended to those navies that follow in the same tradition.[249] That relatively small grouping includes, besides Great Britain and the United States themselves, only Australia, New Zealand, arguably the Netherlands – and Canada (despite attempts to define Canadian naval heritage as extending back to the *ancien régime*, there is no clear continuity of that continental tradition, and for all of its existence the modern service clearly has held itself to be part of the Anglo-American tradition). That is a point of no small import to this study on several levels: from its start, the service accepted as given that it was an integral part of a winning tradition; contrary to the reputation for harsh "Captain Bligh" leadership styles, its officers generally have practiced a quite enlightened treatment of their sailors; and it has maintained an unquestioning belief in "objective civilian control" as a core element of civil-military relations[250] (see Section 3 of this study for a fuller development of the Anglo-American tradition).

---

[246] It would be impracticable for the purposes of this study to re-create the entire history of the Canadian Navy. For a summary history developed along this theme, see *Leadmark: The Navy's Strategy for 2020* (Ottawa: NDHQ/CMS, 2001), Part 4: Sternmark to 2020, 52-70; also available at: http://www.navy.dnd.ca/leadmark/doc/index_e.asp.

[247] It should be stressed that the term "admiralty" has never been used in Canadian practise, but is employed in this study to distinguish that higher strategic level from the ubiquitous use of the term "headquarters".

While certainly pertinent to any historical study of the Canadian Navy, the future relevance of that Anglo-American tradition will become increasingly nuanced, as Canadian society appears to diverge from our American neighbours on important issues. While the new diversity policies of the Canadian Forces indicate that it is not a perfect reflection of the society from which it is recruited, the Navy most certainly is no longer the anglo-saxon bastion it was for the first half-century of its existence.[251] At some level, Canadian sailors and their commanders must be susceptible to the larger societal impulses documented by Canadian pollsters,[252] which must in turn be factored in to the growing divergence in values between the US and Europe.[253] In most cases, Canada's apparent divergence from America towards Europe should not matter greatly, especially as continental Europe continues to distance itself from its totalitarian past. Certainly the democratic underpinnings of the Canadian Navy are a vital factor, and the shift away from America towards Europe, if anything, will reinforce the Canadian tendency to act as an intermediary between the two sides of the Atlantic.

---

[248] Peter Padfield, *Maritime Supremacy and the Opening of the Western Mind: Naval Campaigns that Shaped the Modern World* (Woodstock, NY: Overlook, 1999), quote from jacket notes. That is a similar underpinning to Colin Gray, *The Leverage of Sea Power: The Strategic Advantage of Navies in War* (New York: Free Press, 1992). But neither of these authors explores how the nature of command is different.

[249] Bell and Elleman, *Naval Mutinies of the Twentieth Century*, add validity to this presumption, in noting the distinctions in the ways that democratic and totalitarian powers react to the idea of mutiny, in a concluding chapter, "Naval Mutinies in the Twentieth Century and Beyond," 264-76.

[250] Samuel P. Huntington, *Soldier and the State: The Theory and Politics of Civil-Military Relations* (Cambridge, Mass.: Harvard University Press, 1957), viii. Although he wrote this seminal volume based primarily upon the experience of the United States Army, it often is overlooked that he began his academic career as a student of the United States Navy, with his "National Policy and the Transoceanic Navy," *US Naval Institute Proceedings* 80, no. 5 (May 1954).

[251] The only scholarly analytical study of recruiting patterns of the Canadian Forces is Ernie Stanley Lightman, "The Economics of Military Manpower Supply in Canada" (unpublished PhD dissertation, University of California at Berkeley, 1972). On the postwar Royal Canadian Navy (approximately a half-century after its establishment in 1910), see Richard H. Gimblett, " 'Too Many Chiefs and Not Enough Seamen:' The Lower-Deck Complement of a Postwar Canadian Navy Destroyer – The Case of HMCS *Crescent*, March 1949," in *The Northern Mariner / Le Marin du nord*, IX:3 (July 1999), 1-22.

For the foreseeable future, therefore, the Anglo-American tradition can be accepted as a fundamental determinant of the Canadian naval command style. There is, however, one significant respect in which the Canadian Navy has always differed (and can be expected to continue to do so) from its British and American antecedents: size. It has never been practicable for Canada, at only a fraction of the population and gross domestic product of either Britain or the United States, to maintain naval forces at more than a fraction of either the Royal Navy (RN) or the United States Navy (USN). Despite being somewhat smaller, however, the Canadian Navy has attempted to maintain what might be styled as "command parity" with the larger forces, as necessary to maintain Canadian independence of action (a century ago, the phrase "dominion autonomy" had all the resonance that "national sovereignty" holds for us today). The Navy's own self-analysis situates its perceived status in the hierarchy of world navies quite firmly as a "Rank 3 Medium Global Force Projection Navy – [one] that may not possess the full range of capabilities, but [has] a credible capacity in certain of them and consistently demonstrate[s] a determination to exercise them at some distance from home waters, in cooperation with other Force Projection Navies (eg, Canada, Netherlands, Australia)."[254] Through a combination of demonstrated operational competence, a desire to work cooperatively with other navies, enlightened leadership and management techniques, and a judicious exploitation of available technology, it generally has been successful.

It was not so for the first three decades of its existence, even if not for want of trying. Still, many of the factors for later success are evident in retrospect and are therefore deserving of comment. When Canada looked to establish a naval force in the early 20th century, the model was expected to have been not the Royal Navy but rather the Canadian Militia. The first Director of the Naval Service was the Canadian-born Rear-Admiral, Sir Charles Kingsmill, who had risen to battleship command in the RN, and as such possessed the necessary operational experience and competence to create Canada's navy. Personally identified by Prime Minster Laurier as suitable for the post, Kingsmill agreed entirely with the government plan to develop a Canadian Naval Militia from the existing Fisheries Protection Service, with the intention that such a small coastal service be wholly "Canadian" from the start, and not liable to the constitutional difficulties that had plagued the appointments of British General Officers Commanding to the Militia – and more importantly, as a local coastal force, not likely to be caught in "the vortex of European militarism" so feared by Laurier.[255] Kingsmill reflected these intentions in planning a fleet to be based upon torpedo-boat destroyers and scouts (small cruisers), and built up gradually as Canadian crews could be trained to man newly built ships. The notion started well, but senior British politicians and Admiralty officers maintained that with growing dominion autonomy also came increased responsibilities: as British naval forces concentrated in home waters to face the German threat, Canada (and for that matter Australia) should take over command of the North American and the Pacific Stations (Australia assumed the Australian Station), and acquire larger ships more appropriate to patrolling those waters. The cruisers *Niobe* and *Rainbow* arrived as stopgaps to carry out this policy on the respective coasts, but they had to be commanded and crewed almost entirely by British officers and ratings because of their larger size. Therefore, the Royal Canadian Navy (RCN) was established by default as a miniature of the RN. The Borden government that succeeded Laurier's had differing views on a separate naval force (essentially, they were committed to providing cash contributions directly to the upkeep of the Royal Navy), and the RCN atrophied under Borden. One area of growth came from naval responsibility for the chain of Marconi wireless telegraphy stations established along both coasts to provide a reporting system for vessels in distress. In addition, the small ships of the Fisheries Protection Service were transferred to the administration of the Naval Service, and they, as well as the two cruisers, were all fitted with the revolutionary wireless equipment. The start of the Great War in August 1914 found the RCN at strength of 350, with a further 250 in the Royal Naval Canadian Volunteer Reserve (RNCVR). The men and officers of the RCN were predominantly on loan from or former members of the RN, and the placement of the word "Canadian" in the title of the RNCVR identifies its function in fact, as well in the eyes of the RN.

---

[252] Michael Adams, *Fire and Ice: The United States, Canada, and the Myth of Converging Values* (Toronto: Penguin, 2004).

[253] Robert Kagan, *Of Paradise and Power: America and Europe in the New World Order* (New York: Random House, 2003).

[254] *Leadmark: The Navy's Strategy for 2020* (Ottawa: NDHQ/CMS, 2001), 44.

[255] See Richard H. Gimblett, "Admiral Sir Charles Edmund Kingsmill: Forgotten Father," in Richard H. Gimblett and Michael L. Whitby ,eds., *Commanding Canada's Navy* (in press).

Canada's Naval Great War was not especially remarkable. For the purposes of this study, only a few incidents stand out. The two mostly British-crewed cruisers provided yeoman (but not exceptional) service patrolling the Pacific and Atlantic seaboards of the United States to intercept German blockade-runners for the first two years of the war. When a German submarine threat developed on the East Coast after 1916, the small ships of the Fisheries Protection Service (with their Canadian officers and crews) were pressed into service, augmented by a flotilla of purpose-built trawlers, but their operational performance was equivocal at best: the one occasion upon which a Canadian warship came across a U-boat, the captain of "the small, ill-crewed" trawler HMCS *Hochelaga* deferred to the better deck-gun armament of the larger German submarine and declined combat to go get help (the submarine got away, and the trawler's commanding officer was dismissed from the service, the court martial finding that "*Hochelaga* should have been steered towards the enemy vessel… and all means of offence available made use of in [an] effort to inflict damage or destroy the enemy").[256]

A more lasting tradition was established in the fact that the future commanders of the Canadian Navy in the Second World War all saw action in the First as midshipmen with the battle fleets of the Royal Navy: their formative experience was gaining an appreciation of the capabilities of vessels larger than destroyers, and a confidence in their own ability to operate them. Ashore, Kingsmill's headquarters in Ottawa expanded greatly to comprise a staff of several hundred, but any efficiency and competence it demonstrated relied heavily upon officers transferred on loan from the Royal Navy. Still, because of its small size, the Ottawa headquarters provided mostly administrative oversight and very little operational direction. One little recognized achievement was the evolution of the Marconi network into a most "competent and cooperative" intelligence and control of shipping centre in Halifax, providing direct support to the British admiral directing convoys operating from that port."[257] That successful effort stemmed from two factors: a clear separation of administrative and operational responsibilities, and the constructive personality of the British admiral. These were underscored by the less happy experience with another British officer, Vice-Admiral Sir Charles Coke, transferred to the Canadian service to organize the East Coast Patrols in 1917. A stuffy and inept leader (he bore major responsibility also for the earlier loss of the *Lusitania*), Coke's inability to focus on the task of organizing local sea patrols, in conjunction with his unwillingness to follow orders from his superiors in Ottawa, left Canada's coast vulnerable to U-boat attack.[258]

---

[256] Roger Sarty, *Canada and the Battle of the Atlantic* (Montréal: Art Global, 1998), 18-20.

These two factors (confusion of administrative-operational responsibility, and personality of the commander) will be seen to be recurring themes in Canadian naval command. Of course, they are endemic to any military, but they are magnified in comparison to the British and American experience because of the "smallness" of the Canadian service. Looking first at the personality of the commander, the larger services have a broad enough base to incorporate a variety of personalities such that, while colourful characters may stand out, they tend to be the exception rather than the norm.[259] In the Canadian service the range of characters is not so broad and tends to be self-selecting for promotions, and with a somewhat more centralized span of command there is little depth to disperse the impact of error, so that conflicts between commanders have more serious ramifications (as will be discussed below). With respect to administrative-operational responsibility, whereas the larger services have the depth to establish an "admiralty" organization capable of accomplishing both functions, in Canada the tendency has been to centralize administrative oversight in a national headquarters in Ottawa, leaving operational matters to the respective coastal commanders. It is telling that in the United States Navy, the position of head of the navy is "Chief of Naval Operations" (CNO), while in Canada, the position is styled "Chief of the Naval [or Maritime] Staff" (CNS / CMS).[260]

---

[257] Roger Sarty, "The Naval Side of Canadian Sovereignty," in *The Maritime Defence of Canada* (Toronto: Canadian Institute of Strategic Studies, 1996), 67-8.

[258] Michael Hadley and Roger Sarty, *Tin-Pots and Pirate Ships: Canadian Naval Forces and German Raiders, 1880-1918* (Kingston: McGill-Queen's Press, 1990), 190-91. Coke's eventual replacement was Captain Walter Hose, another British officer but with "Canadian" experience of helping to establish the Royal Naval Reserve division in Newfoundland in the early 1900s, and having transferred to the RCN in command of *Rainbow* since 1912; he would go on to become Director of the Naval Service (later Chief of the Naval Staff) in 1923.

[259] The main point of Andrew Gordon, *The Rules of the Game: Jutland and British Naval Command* (London: John Murray, 1996) is to highlight the very different command styles of the dominant Jellicoe as opposed to the upstart Beatty factions in the Royal Navy. In the USN, for every "Bull" Halsey ("their most colourful, risk-taking carrier admiral"), there were dozens of less flamboyant flag officers; the quote is from Kenneth J. Hagan, *This People's Navy: The Making of American Sea Power* (New York: Free Press, 1991), 319 (this very readable survey history has the novel thesis that the USN is naturally a small-ship "continental" [frigate] navy modelled on the fleets of European powers and geared to commerce raiding).

[260] The equivalent British term is First Sea Lord of the Admiralty. The origin of the title CNS is an interesting and early example of the integrationist tendencies of the Canadian Forces, dating back to the

Other related "smallness" factors affecting Canadian naval command are the greatly constricted capacity of a fleet with insufficient ships to accomplish all assigned tasks, and the manning shortage from which it paradoxically seems constantly to suffer. If those elements had already existed at the time of its establishment, they became entrenched in the interwar period. Although during the First World War the RCN had operated mostly small ships in home waters, by the end there was a sufficient cadre of trained Canadian officers and ratings with overseas experience that the RCN confidently accepted the surplus British light cruiser *Aurora* and a pair of accompanying destroyers as the basis for a revival of Kingsmill's fleet plan (if adopted, it would have produced by 1934 a 46-ship navy, consisting of 7 cruisers, 12 destroyers, 18 anti-submarine patrol craft, 6 submarines and 3 tenders[261]). Instead, Cabinet used the arms limitations of the 1922 Washington Naval Conference as a pretext to slash the naval budget; Kingsmill resigned in protest, and was replaced by Walter Hose, who cut the permanent force to 500 officers and ratings, kept only the two destroyers and four trawlers in commission as training vessels, closed the naval college, and diverted resources to the establishment of the Royal Canadian Naval Volunteer Reserve (RCNVR).

Hose had little other choice, but the effects would shape the command style of the RCN for generations, and mostly in a negative fashion. With headquarters reduced to a half-dozen officers and a handful of civil servants, the immediate goal of "Canadianizing" the service was achieved by returning all the British officers home. But the capacity to undertake any higher-level strategic planning was severely curtailed, with most of the CNS's efforts devoted to staving off attacks from the other services for even more of its scarce budget, leading to a reputation for shoddy staffwork and an irrational suspicion of the other services. At the same time, with no naval college, aspiring Canadian officers were sent to Britain for their training, producing a somewhat mixed experience: the RN exchanges ensured Canadian officers had a superb tactical and operational formation, but the degree of "Britishness" (and by inference the "un-Canadian-ness") of the RCN remains a subject of intense debate (it should be noted that RCN ratings also took their long courses and served in exchange billets with the RN to at least as great an extent as the officers). To a certain extent, the influence of example was compelling: there was, at the time, only one example of a global, successful navy, and that was the RN, and it would be asking too much to expect the senior officers of the RCN, or any other navy, to disregard it as the role model. More problematically, with the RN exchanges, courses and appointments being limited to operational at-sea positions, Canadian naval officers had practically no exposure to the workings of admiralty, compounding any lack of appreciation for the value of higher-level staffwork. And in the longer run, the RCN lost its appreciation also for the value of higher education, adopting instead the mantra that junior officers were better getting to sea as early as possible to learn their trade.

For all that, through the interwar period, the RCN became a quite proficient destroyer navy, pushing the class to the limits of its capabilities, and undertaking a modest expansion, even if

---

tenure of Walter Hose, who forced adoption of the term in 1928 as a means of establishing his parity with successive Chiefs of the General [Army] Staff, who constantly attempted to absorb the Naval Service (as they had the RCAF) as a cost-saving measure; see James Eayrs, *In Defence of Canada, Vol I: From the Great War to the Great Depression* (University of Toronto Press, 1964), 229-56ff.

[261] "Occasional Paper No. 2: Proposals for Canadian Naval Expansion," 3 July 1919 (NAC, RG24, vol 5696, NSS 1017-31-2).

somewhat slower than anticipated.[262] Destroyers then were much smaller and less capable ships than those now in service,[263] intended primarily to screen the larger capital warships of the main battle fleet against close-in torpedo boat and submarine attack. With their short "legs" and modest size, they were not especially well suited to the expanse and harsh conditions of Canadian waters. A better class in both those respects was the cruiser, the classical definition of which is any ship capable of undertaking "scouting, commerce raiding and protection, and distant patrols."[264] The term "cruiser", however, carries with it a whiff of imperial nostalgia that does sit well with Canadian sentiment, and in modern times the class has become associated with a much larger and heavier armament; more practically in the 1920s, being larger ships, they did not fit the Canadian budget. Therefore, the RCN had to make do with more financially viable destroyers, but with their anticipated primary employment being to ensure neutrality in the event of an American-Japanese war, Canadian officers adapted them to novel uses more typical of light cruisers. Tactics concentrated upon stealthy night attacks against heavier opponents, and despite their limited range they voyaged far from home waters, into the Caribbean and down the Pacific coast of Latin America. In one especially noteworthy episode, a pair of Esquimalt-based destroyers en route to winter exercises in the Caribbean in January 1932 were diverted to El Salvador "to protect British interests" in the midst of a peasant uprising, and through the initiative and resourcefulness of the various officers, were instrumental in restoring order.[265]

The RCN entered the Second World War in September 1939, not with the 46-ship fleet of Kingsmill's plan, but rather a paltry baker's dozen: 6 mostly modern destroyers, an equal number of minesweepers of mixed vintage, and a sail training ship. It ended the war six years later as the third largest allied power, with some 450 vessels of all types except battleships and submarines, and having seen action in practically every major theatre. The story of RCN command in the war is one of the management of expansion and contribution to major operations. The verdict on that command varies according to the level at which it was exercised, from a generally solid (and occasionally brilliant) tactical performance, through emergence as an operational-level power, to strategic ambivalence.

---

[262] On the proficiency of the interwar RCN, see Michael Whitby, "In Defence of Home Waters: Doctrine and training in the Canadian Navy During the 1930s," *The Mariner's Mirror* 77, no. 2 (May 1991), 167-77.

[263] The first pair built to Canadian specifications (*Saguenay* and *Skeena*, commissioned in 1931) displaced some 1300 tons, speed 31 knots, and armed with four single 4.7-inch mountings and eight 21-inch (anti-ship) torpedo tubes. They were essentially a standard British design, modified to Canadian specifications to incorporate steam heat, improved ventilation, extra refrigeration, and showers, and in consequence of these minor concessions to comfort, were dubbed the "Rolls-Royce destroyers" by the RN (see A. B. German, *The Sea is at Our Gates* (Toronto : McClelland & Stewart, c1990), 59). The standard reference on Canadian warship specifications is Ken Macpherson and Ron Barrie, *The Ships of Canada's Naval Forces, 1910-2003* (St Catherines, ON: Vanwell, 2003).

[264] On the idea of "cruiser" in the RCN, see Kenneth P. Hansen, "Kingsmill's Cruisers: The Cruiser Tradition in the Early Royal Canadian Navy," *The Northern Mariner / Le Marin du nord* 13, no. 1 (January 2003), 37-52.

[265] Serge Durflinger, "In Whose Interests? The Royal Canadian Navy and Naval Diplomacy in El Salvador, 1932," in Ann L. Griffiths, Peter T. Haydon and Richard H. Gimblett, eds., *Canadian Gunboat Diplomacy: The Canadian Navy and Foreign Policy* (Halifax, NS: Dalhousie University Centre for Foreign Policy Studies [CFPS]], 2001), 27-44. *Skeena*'s captain, Lieutenant-Commander Victor Brodeur, had joined the Naval Militia in 1908, went on to be the senior Naval Member of the Canadian Joint Staff in Washington during the Second World War, and retired in 1946 as Commanding Officer Pacific Coast; the landing party officer was Lieutenant K.F. Adams, who commanded a variety of destroyers during the war (as well as the armed merchant cruiser *Prince Henry*) and aircraft carriers after retiring as Flag Officer Naval Divisions in 1956.

The popular image of the RCN in the Second World War is of a Corvette Navy waging the Battle of the Atlantic against the long odds of German U-boat Wolf Packs, and triumphing in spite of fitful administration by Naval Service Headquarters (NSHQ) in Ottawa.[266] One historian has gone so far as to accuse the RCN of "institutional schizophrenia" in devoting wartime resources to the pursuit of the ambition to acquire a postwar big-ship blue water fleet at the expense of the "Sheep Dog Navy… of small ships manned by reservists."[267] Again, the truth is somewhat more complex. NSHQ certainly was hampered by its own lack of a solid base from which to effect a 50-fold expansion (much greater than any of the other allies, the Americans and British each undergoing "only" a 20-fold increase in size), but if the experience was hellish, the road to it was one paved with the good intentions of being too willing to answer the pleas of those other allies (especially the British) to man ships that they themselves could not fill. Caught between the "rock" of looking after things ashore and the "hard place" of ensuring that the ever-increasing fleet of ships at sea were commanded by the best officers available, Rear-Admiral Percy Nelles (CNS since 1934, and the first to have served in the RCN from the start of his career) was forced to staff NSHQ with a mixed bag of lesser-qualified officers, some superannuated reservists of limited experience, and a few key positions on loan from the RN.

At sea, Canadian command proficiency was spotty certainly until at least mid-1943, by which time the critical convoy battles had been fought – and won – mostly under the leadership of the RN. But the load had been shared equitably among the permanent force (or regular navy) and the reservists, with a hard core of professional naval officers in most escort groups (usually in command of a destroyer and acting as the Senior Officer of the Escort, or SOE[268]) to shepherd the smaller corvettes and minesweepers commanded by reservists. And once given the opportunity to become proficient, they excelled. The effective combination of new tactics and equipment can be seen in the pursuit of U-774 in March 1944. Over a period of 30 hours, and a distance of 80 miles, she was hunted and attacked by two Canadian destroyers, a frigate, two corvettes and a RN destroyer, undergoing 23 separate depth-charge attacks before being forced to the surface exhausted, and then destroyed.[269] A sustained operation of this duration against an invisible enemy reflects teamwork of the highest order. Command and control, suggesting the unifying will of an individual, are not sufficient. It requires the co-operation and co-ordination of a "band of brothers." Effective detection devices would have guaranteed an early kill; unlimited weapons would have permitted saturation assault. Neither was available in those circumstances. Only co-ordination between hunters, and maintenance of pressure, could have permitted multiple attacks and continuous tracking to a kill. It was experience and dedication, aided by devices and weapons that achieved the result. The RCN had come of age.

---

[266] See for example, Hal Lawrence, *A Bloody War: One Man's Memories of the Canadian Navy, 1939-45* (Toronto: Macmillan, 1979).

[267] Marc Milner, *Canada's Navy: The First Century* (University of Toronto Press, 1999), 138-39.

[268] It is important to note that the SOE (the latter day equivalent of a task group commander) invariably was also the captain of the ship in which he rode, and had to perform both jobs, usually only with three watchkeeping officers to drive the ship, and no other "staff" except for his executive officer. It was an incredible demand, and many found the long convoy escorts physically and emotionally draining, perhaps the best example being Lieutenant-Commander G. Windeyer's experience with Convoy ONS 154, the Christmas convoy of 1942, which lost 14 merchantmen in exchange for only one U-boat; see German, *The Sea is At Our Gate*, 129-30.

[269] German, *The Sea is at Our Gates*, 151-53. Depth charge attacks and distance from the map of the attacks, p. 152. On the broader theme of increased Canadian tactical proficiency, see also, Marc Milner, *The U-Boat Hunters: The Royal Canadian Navy and the Offensive Against Germany's Submarines* (University of Toronto Press, 1994).

Achieving this degree of tactical level command competence was not easy. Complicating matters was the mix of Canadian naval "commanders" between professional regulars and wartime reservists, and that the latter came in two categories, the RCNVR, generally highly educated but with little practical sea-going experience, and the RCNR, who had some familiarity at sea from previous merchant service but too frequently found the demands of warfighting to be an unmanageable strain.[270] By the latter half of 1943, with the operational situation changing in the allies' favour just as the reservists were becoming proficient, it was entirely appropriate that greater numbers of them should assume command not just of a new class of frigates but frequently also as SOE, freeing the regular RCN officers to take command of the larger Tribal class destroyers, cruisers and escort carriers that were only then becoming available. Although command of the larger ships was reserved for the career professional officers of the RCN, in truth both regulars and reservists filled practically all other officer and ratings positions interchangeably throughout the fleet. And contrary to the stereotype that the RCN officers were somewhat indifferent to the plight of their ratings (ostensibly because the officers had trained in the class-riddled RN system),[271] there stand many examples, such as that of Captain Horatio Nelson Lay (although improbably-named for a Canadian, he was a favourite nephew of Prime Minister Mackenzie King). He was in command of HMS *Nabob*, a Royal Navy escort carrier with a Fleet Air Arm squadron embarked and British Merchant Service personnel in the Engine Room, but otherwise crewed by Canadians. Disparities between Canadian and British rates of pay and sub-standard living conditions precipitated one of the very few incidents of mass protest in Canadian wartime experience, but in reporting the incidents to both his uncle and the Admiralty, he was able to leverage concessions to the advantage of all the sailors.[272]

Drawing a distinction between the larger ships from the smaller ones on the North Atlantic Run is appropriate, nonetheless, because they did experience a very different, if no less challenging, war from the convoy escorts. Although far closer to "classic" portrayals of war at sea, it was an ironically fleeting experience: for example, the nightly dashes by the Tribal class destroyers across the Channel to engage German coastal forces have proven to be the only surface actions against comparable enemy warships in the experience of the Canadian Navy.[273] The fact that Canadian naval commanders are unlikely ever to meet an opposing enemy fleet renders it all the more poignant that the sole memorable Canadian naval phrase should be the dying words of Commander John Stubbs, captain of the Tribal class destroyer *Athabaskan*, warding off another destroyer attempting to rescue survivors from his stricken ship, but in doing so taking a tremendous risk by remaining motionless with German forces still in the area: "Get away, *Haida*! Get Clear!" That stands in contrast to the Royal Navy's Nelsonic phrase, "England expects every man to do his duty", or the US Navy's Farragut storming Mobile Bay with a "Damn the torpedoes! Full speed ahead!" If not as rousing, at least the general humanity of the effort shines through.

---

[270] One of the best accounts of this war happens also to be Canadian: Alan Easton, *50 North: An Atlantic Battleground* (Toronto: Ryerson, 1963). Easton was an especially competent RCNR, and his story ends – if one reads between the lines – with his breakdown. Nicholas Monsarrat based an episode in his epic novel, *The Cruel Sea* (New York: Knopf, 1953) on the experience of another especially articulate reservist, Louis Audette (RCNVR), in which as captain of a corvette he had to decide whether to prosecute a solid U-boat contact located under a group of torpedoed merchant sailors. It was a textbook command decision challenge: drop the charges and kill the men in the water, or let the U-boat go and risk the chance it could claim more victims by sinking other ships? For Audette, after he had made the decision, fate intervened as his ship lost electrical power and he was forced to abort the attack.

[271] L.C. Audette, "The Lower deck and the Mainguy Report of 1949," in James A. Boutilier, ed., *The RCN in Retrospect, 1910-1968* (Vancouver: University of British Columbia Press, 1982), 235-49.

[272] Gimblett, "What the Mainguy Report Never Told Us," 90.

There remains another stereotype respecting RCN command in the Second World War that needs be addressed for the purposes of this study. As suggested above, it has been popular to portray the Battle of the Atlantic as much as one of RCNs (professional regulars) against RCNVRs (amateur reservists). New scholarly analysis of the wartime operations, however, suggests that, because a number of regular RCN officers assigned to convoy escort duties were at least as dismayed at the apparent lack of attention from NSHQ as were the reservists, this "conflict" is more appropriately viewed as one of fleet versus shore establishment, making it part of a far more universal experience (for example, army field units are just as prone to complain that rear-area headquarters are out of touch with what is transpiring on the battlefield; nor are either of these experiences uniquely Canadian). But where the at-sea RCN officers pursued the issue of their ships' poor technical equipment through a too-cumbersome chain of command, the RCNVR officers did not hesitate to use their peacetime connections (a number of them were high-powered Ottawa-based lawyers) to take matters direct to the Minister of the Naval Service.[274] The "equipment crisis" very quickly assumed a political dimension in which the Chief of the Naval Staff, Nelles, became a double victim, first as a scapegoat by the Minister (whom the CNS had kept thoroughly briefed on developments) and then undermined by his Vice-Chief of the Naval Staff (VCNS), Rear-Admiral George C. Jones, who manipulated the situation to get himself installed as CNS, probably one of the most blatant instances of careerism at the expense of the service.[275]

NSHQ nonetheless did achieve some strategic success. The major re-shuffling of NSHQ in September 1942 that brought in Jones to the enhanced position of VCNS effectively had established the national headquarters as a "general staff". Although Jones' record was controversial (see discussion in the previous paragraph), the creation of the Directorate of Plans at his instigation was an important development in the evolution of Canadian strategic command. In it, he paired a batch of brilliant young RCNVRs (among their rank were several Rhodes scholars) with more senior regular officers who could provide a leavening of practical experience, and he specifically gave them a free reign from their Admiralty counterparts to explore innovative concepts for the future needs of a growing service.[276] Increasingly through the Post-hostilities Planning Committee they came into contact with the mandarins at the Department of External Affairs and in the Privy Council (the list included Lester Pearson, and Hume Wrong). This next generation of Canadian political leaders recognized the limitations of the pre-war policy of isolationism, and their international activism provided naval commanders the firm political endorsement that Canada required a postwar military force with global reach, which in those days only a navy with a balanced fleet structure of carriers and cruisers could provide.[277]

---

[273] See Michael Whitby, "Masters of the Channel Night: The 10th Destroyer Flotilla's Victory off Île de Blatz, 9 June 1944," *Canadian Military History* 2, no. 1 (Spring 1993), 5-21.

[274] Richard Oliver Mayne, "A Political Execution: Expediency and the Firing of Vice-Admiral Percy W. Nelles, 1943-44," *The American Review of Canadian Studies* (Winter 1999), 557-92.

[275] Richard Oliver Mayne, "Vice-Admiral George C. Jones: The Political Career of a Naval Officer," in Gimblett and Whitby, *Commanding Canada's Navy*.

If the RCN enjoyed one unequivocal success, it was the establishment in March 1943 of the Canadian Northwest Atlantic, the only allied theatre of war ever commanded by a Canadian officer of any service. That headquarters, operating out of Halifax, established also a tradition of RCN-RCAF air-sea cooperation that proved vital in prosecuting the last two years of the Battle of the Atlantic.[278] Although interrupted briefly in the postwar period, it would be re-established in the mid-1950s and continues to the present day. Its commander for the duration of the war was Rear-Admiral Leonard W. Murray, who possessed just the right combination of a close personal touch for the men at sea, and the professional competence to satisfy the overriding British and American requirement that the significant numbers of their forces assigned to him would be effectively employed.[279] The RCN had achieved command parity with its larger allies, although this was hardly appreciated at the time, in great part because it was considered the natural course of events. However, Murray's ever-enlarging span of control (he exercised the theatre command while still maintaining responsibility for the vast Halifax naval base) was a major factor contributing to the VE-Day celebrations in Halifax devolving out of control into an infamous riot.[280] For that reason perhaps more than anything, Murray's overall achievement of command has been under-recognized by Canadians.

Having finally achieved, in the dying days of the Second World War, a balanced fleet structure, the strategic objective of the commanders of the Canadian Navy to this day has been to retain that versatility. That struggle more than anything else has shaped the command style of the modern Navy. It has on occasion been rewarded with great success, but it has too often been achieved at great cost. In the immediate postwar period, it almost led to the physical collapse of the RCN.

---

[276] Alec Douglas, "Conflict and Innovation in the Royal Canadian Navy, 1939-1945," 11.

[277] This subject will receive proper treatment in Alec Douglas, Roger Sarty and Michael Whitby, *A Blue Water Navy: Book 2 of Vol II of the Official Operational History of the Royal Canadian Navy in the Second world War* (publication pending, 2005).

[278] Richard Evan Goette, "The Struggle for a Joint Command and Control System in the Northwest Atlantic Theatre of Operations: A Study of the RCAF and RCN Trade Defence Efforts During the Battle of the Atlantic" (unpublished MA thesis, Queen's University, 2002).

[279] Murray has lately come under the scrutiny of several prominent Canadian naval historians, making him perhaps the most studied of any senior Canadian naval officer. See for example: Wilfred G. Lund, "Rear Admiral Leonard Warren Murray, CB, CBE, RCN: A Study of Command and Leadership in the Battle of the Atlantic," in Yves Tremblay, ed., *Canadian Military History Since the 17th Century* (Ottawa: NDHQ/DHH [2001]), 297-308; Marc Milner, "Rear-Admiral Leonard Warren Murray: Canada's Most Important Operational Commander," in Gimblett and Whitby, *Commanding Canada's Navy*; and Roger Sarty, "Rear-Admiral L.W. Murray and the Battle of the Atlantic: The Professional Who Led Canada's Citizen Sailors," in Bernd Horn and Stephen Harris, eds., *Warrior Chiefs: Perspectives on Senior Canadian Military Leaders* (Toronto: Dundurn, 2001), 165-90.

[280] R.H. Caldwell, "The VE Day Riots in Halifax, 7-8 May 1945," *The Northern Mariner / Le Marin du nord*, 10, no. 1 (January 2000), 3-20.

Within six months of VJ Day, de-mobilization had reduced the RCN to a shadow of its wartime peak: a fleet carrier, a cruiser, a pair of destroyers, and a frigate, manned by just over 3500 all ranks (down from a wartime high of nearly 450 ships and 100,000 personnel). But with an authorized 10,000-man peacetime personnel ceiling, senior commanders found themselves in the unlikely position of having to expand immediately after the recent conflict to achieve it. To ensure the survival of the blue water fleet, they had to continue the wartime pace of training new recruits. At the same time, the desire to keep as many ships in commission as possible within that ceiling precipitated what would amount to a near-perpetual manning shortage: having become convinced of the need to maintain an efficient shore establishment, NSHQ nonetheless took the unusual step of establishing the sea-shore ratio at 50:50 in contrast to the more normal 40:60 of the British and American services (the others' lower ratio allows a slight "excess" for greater flexibility of personnel management, especially for coursing and compassionate cases, and in the event of sudden drops in the retention rate; without it, there is no redundancy in the system, and there are exactly the number of persons to fill all positions at any time – and they must all be serving). Maintaining that sea-shore ratio in turn created great challenges for commanders ashore and especially of the ships, as they tried to balance the needs for their sailors' career development and family considerations against the necessity to have all billets filled for major deployments. Contrary to popular belief, the senior Navy leadership was quite aware of the challenges, but they were confident that a number of reforms they instituted would be sufficient to meet them, and that the needs of the service demanded such a pace. To their dismay, the RCN was plagued by a series of disciplinary incidents through the postwar years, culminating in the Mainguy Commission of Inquiry in 1949.[281] *The Mainguy Report* did little more than state the obvious to Canadian naval commanders (although it did perpetuate the myth of the RCN's un-Canadian-ness), but it was sufficient to shock Canadian politicians as to the fiscal plight of the RCN. That, and the outbreak of the Korean War the following year provided the stabilizing impulses that would guide the expansion of the RCN through the onset of the Cold War.

To meet the Korean commitment, typically three destroyers were in-theatre at a time, but given the distances from either Canadian coast, a staggered rotation of yearlong deployments was adopted. Korea was an important influence on Canadian command styles on a number of fundamental levels. To begin, it re-confirmed the tactical competence of the destroyer navy and the versatility inherent in that class of ships (by now, the RCN was equipped primarily with the powerful Tribal class).[282] As well, the yearlong cruises brought a measure of stability to the fleet not seen since pre-war times, in establishing continuity in ship's companies that since 1939 had been changed almost every time they entered port. But perhaps most critically, while the experience of their ships being divided amongst American and British task groups committed Canadian commanders to interoperability with those allies, it also convinced them that, however operationally sound such measures were, the political impact of the Canadian Navy had been diminished; thereafter, it has been "practically an article of faith" for Canadian naval commanders that warships on foreign deployments should be kept together as a recognizable national naval task group.[283]

---

[281] Richard H. Gimblett, "The Post-war 'Incidents' in the Royal Canadian Navy, 1949," in Bell and Elleman, *Naval Mutinies of the Twentieth Century*, 246-63.

[282] See the sections by Michael Whitby in Directorate of History and Heritage, *Canada and the Korean War* (Montréal: Art Global, 2002), 21-36 and 117-28.

Elsewhere, the Cold War was producing other powerful influences upon Canadian command styles. The utility of having invested in a versatile balanced fleet was confirmed when the government turned to the RCN to deploy the carrier *Magnificent* with its embarked air arm to meet Canada's initial NATO commitment until an overseas Brigade and Air Division could be formed. Maintaining that balanced fleet in top form was a continuous challenge. The personnel issues described above were complicated yet more by the general expansion of the fleet to nearly 50 major warships, [284] including the introduction of the Canadian-designed class of *St Laurent* destroyer-escorts (less powerful than true destroyers, they performed more of a frigate function) (the remaining numbers were made up by conversion of the wartime *Tribal* class destroyers and a number of the *Prestonian* class of frigates). But for all those challenges, there also lay opportunity in the expansion. Finally, the RCN had sufficient mass and the ashore establishment that it could undertake a credible level of training for junior officers and ratings in Canada instead of Britain.[285] This act of patriation precipitated a major cultural change in the RCN that accelerated through the 1950s and subsequent decades, as the Navy struggled to keep abreast of evolving Canadian social norms. Application of the *Charter of Rights and Freedoms* had a relatively small influence upon the Canadian Navy, other than procedural changes in the practice of military justice, tending instead to reinforce the compassionate instincts of most naval commanders. A greater problem has been accommodation of the French fact of the Canadian nation into the make-up of the Navy, hindered mostly by the smallness of the service, which made separate courses in French difficult to sustain within a tight budget.[286] But the designation in 1968 of HMCS *Ottawa*

---

[283] Jean Morin and Richard Gimblett, *Operation Friction: The Canadian Forces in the Persian Gulf, 1990-1991* (Toronto: Dundurn, 1997), 179.

[284] This general theme is given a thorough critical examination in Wilfred G.D. Lund, "The Rise and Fall of the Royal Canadian Navy, 1945-1964: A Critical Study of the Senior Leadership, Policy and Manpower Management" (unpublished PhD dissertation, University of Victoria, 1999).

[285] Great changes in officer education were apparent in Canada after the war. The Royal Canadian Naval College had reopened in 1942 at HMCS *Royal Roads*, to supply officers to the permanent Navy. It was modelled on HMS *Britannia*, and sent cadets to sea after two years. It was not until 1957 that the RCN adopted the same four-year college path for officers as the other two services. In 1954, the navy also opened HMCS *Venture*, in Esquimalt, a two-year course for officers not aspiring to a degree, in essence, the equivalent of a Short-Service Commission for officers with a sense of adventure, but no intention of making the service a career. It was particularly valuable in providing naval aviators. In addition to this, Canada followed a program of commissioning on merit from the lower deck, meeting and exceeding the level set (but never reached) in Britain. By 1960, one third of the officers were Commissioned from the Ranks (CFR). While in many ways a positive development, this expansion of the officer enlistment base had its downside, in perpetuating the low percentage of university educated officers in the RCN, which was noted as a significant impediment to their effectiveness in higher command in Hon. Douglas Young, Minister of National Defence, *Report to the Prime Minister on the Leadership and Management of the Canadian Forces* 25 March 1997 (and especially in the supporting papers by Professors David Bercuson, Jack Granatstein, Albert Legault and Desmond Morton).

[286] Unlike the Army, with its francophone regiments, the RCN was almost entirely anglophone, since English was the international language of the sea. In 1951, only 2.2 percent of the officers and 11 percent of other ranks were francophone, and 80 percent of francophone recruits failed culturally biased RCN entrance exams (compared to 52 per cent of others). See Serge Bernier and Jean Pariseau, *French*

(and later her sister ship *Skeena*) as a French Language Unit,[287] and then the establishment of Naval Reserve Headquarters and a major training school in Quebec City, have improved circumstances to the point where today francophones constitute a significant proportion of flag rank officers. The Navy also has made great progress in ensuring equitable employment of women (which has improved greatly with separate bunking and lavatory facilities in newer classes of vessels), who are now entering command positions in the course of normal career progression.[288] And although the low numbers of visible minorities in the Navy demonstrate it does not reflect the diversity of Canadian society (but arguably no less than the other services), recent operational experience demonstrates that naval commanders have internalized the multicultural reality of our society (see discussion below). Overall, the maintenance of a deep-seated foundation of professional values inherited from the RN, with an overlay of Canadian social values, and to a lesser extent Canadian naval experiences, has resulted in an operational culture that is distinctively Canadian.

Another major part of this cultural change was the shift from the British to the American model as the standard for a successful world-class navy, a process that arguably began earlier in the Navy than either the Army or the Air Force. It began during the Second World War, strategically with the Ogdensburg Agreement and the "Plan Black" for the coordinated defence of North America that emerged from it, and operationally through liaison with American forces in the Canadian Northwest Atlantic theatre. It received further impetus with the adoption of USN communications procedures in 1947, and then the incorporation of mostly American sensors and weapons systems, as well as bunking and messing arrangements, in the *St Laurent* class (the hesitation in the shift was marked by the fact that the hull itself and engineering plant were essentially adaptations of a British design). But it was solidified by the failure of the NATO standardization process to keep abreast of American strides in technological development, especially communications. Through the 1960s and into the 1970s, it became apparent to Canadian commanders sooner than for most other navies that the USN would be setting the allied standard for what eventually would become known as "interoperability". For the Canadian Navy, more than any others because of the shared responsibility for the defence of North America, interoperability was not a choice, but a necessity. If that has become a "rule" to define Canadian naval communications capability, it has an interesting corollary in that because of that unique shared responsibility Canada has enjoyed special access to USN equipment, codes, and procedures.[289]

Meanwhile, technology was proving to be a major factor unto itself. The advent of nuclear-powered submarines, jet fighters, and missile systems marked the onset of a period that

---

Canadians and Bilingualism in the Canadian Armed Forces. Vol I: 1763-1969, The Fear of a Parallel Army; and Vol II: 1969-1987, Official Languages: National Defence's Response to the Federal Policy (Ottawa: Supply and Services Canada, 1986 and 1994).

[287] Serge Bernier, "HMCS *Ottawa III*: The Navy's First French-Language Unit, 1968-1973," in Hadley, et al., *A Nation's Navy*, 310-22.

[288] See "A Commanding Presence: Marta Mulkins is first woman to helm a Canadian warship," Toronto *Star*, 13 July 2004.

[289] For a further discussion of this issue, see Richard H. Gimblett, "Canada-US [Naval] Interoperability: Towards a Home Port Division of the United States Navy?," in Ann L. Griffiths, ed., *The Canadian Forces and Interoperability: Panacea or Perdition?* (CFPS, 2002), 101-108, in which the author argues that failure to maintain functional communications interoperability with the Americans at the task group command level will necessarily lead to operational integration with the USN.

Norman Friedman has aptly characterized as a revolution in naval technology.[290] Such developments increased the pace of naval warfare, meaning commanders had to process greater amounts of information at quicker rates in order to make decisions. The close relationship formed between the RCN and the defence research community led to a progression of innovations – such as variable depth sonar (VDS), the high frequency SQS-505 hull-mounted sonar, hydrofoil experimentation, the marriage of helicopters to destroyers, as well as improved Command and Control (C2) systems – that were key factors in allowing Canadian commanders to deal with the speed of naval warfare.[291] Essentially, these technologies allowed detection and engagement of Soviet submarines and surface units at much greater distances than in the past. Overall, these technologies gave commanders more time to assess situations, but they still had limitations. Referring specifically to C2 systems, as early as 1962, Canadian engineers working on the General Purpose Frigate program toyed with the idea of developing a completely automated command and control system that would effectively replace commanding officers with computers, and in so doing "remove the human element of command."[292] (The Canadian development of automated command and control systems [CCS] is examined in Section 5 of this study.) While supporting more automation, senior staff officers remained leery of this proposal. In their view, all technologies had a "point of critical mass" and as such they were unwilling to create situations where "computer error" could lead to international crisis or even nuclear confrontation.[293]

Such "Doctor Strangelove" scenarios soon were proven to be possible, as the Cuban Missile Crisis pushed the world to the nuclear brink in October 1962. This episode proved to be a very mixed experience for Canadian naval commanders. On the positive side, the deployment of the East Coast fleet to undertake barrier ASW operations was a major operational success that was critical to resolution of the international crisis. On the negative side, however, it precipitated a crisis in Canadian civil-military relations that would come to haunt the RCN, for although the fleet had sailed in accordance with established CANUS agreements, Rear-Admiral Ken Dyer (the Halifax commander) ordered it to do so against the explicit wishes of Prime Minister Diefenbaker.[294] Among those who remembered the Navy's actions was Paul Hellyer, and when he became Minister of National Defence in a new Liberal government within the year, the Navy was a special object of his unification reforms. The RCN actually produced some of the most novel responses to Hellyer's determination to cut the defence budget and "to do things differently," but he would have none of them, and the "revolt of the admirals" initiated two decades of decline for the Canadian Navy.[295]

---

[290] Norman Friedman, *The Postwar Naval Revolution* (Annapolis: Naval Institute Press, 1986), 9-10.
[291] Shawn Cafferky, "Un-Charted Waters: The Development of the Helicopter Carrying Destroyer in the Post-war RCN, 1943-1964," Carleton University, Unpublished PhD Dissertation, 1996, 344-349; D. Bassington, "The Canadian Development of VDS," *The Canadian Warfare Bulletin* (Commemorative Edition, 1985), 45; John R Longard, *Knots, Volts, and Decibels* (Ottawa: Defence Research Establishment, 1993), particularly chapters 8 and 9.
[292] Senior Officer's Briefing – General Purpose Frigates, DHH, 95/102.
[293] The novel by Mark Rascovich, *The Bedford Incident* (New York: Atheneum, 1963), later made into a popular movie, while not specifically driven by "computer error" certainly had "human error" as its major plot device. It vividly captures the spirit of the Cold War at sea, and the pressures – and repercussions – of command decision-making.

Closer to our own time, and in real life, in the 1980s the US Navy experienced two devastating incidents in the Persian Gulf region, directly attributable to faulty command decision-making: the frigate *Stark* being hit unawares by an Iraqi Exocet missile; and the cruiser *Vincennes* erroneously shooting down an Iranian Airbus.
[294] Both issues are given full treatment in Peter T. Haydon, *The 1962 Cuban Missile Crisis: Canadian Involvement Reconsidered* (Toronto: Canadian Institute of Strategic Studies, 1993).

The Navy's pitch to Hellyer for the acquisition of an amphibious carrier and guided missile destroyers for firepower support was intended as much to address the specific needs of the Minister's new pet task of UN peacekeeping, as to retain the balance in the fleet structure the Navy knew would be required for a wider range of operations. Senior naval commanders were stunned, however, as the government soon moved on to other priorities, and the cancellation of the General Purpose Frigate and the scrapping of the carrier *Bonaventure* left the Navy as a dedicated ASW force (and a weakened one at that).[296] The ASW role had been adopted as the RCN's NATO commitment, but was proving to be a very mixed blessing. Initially, in the early 1950s, it had provided a compelling rationale to sustain the Cold War expansion of the RCN, for which its adoption has been described as "the most important event in Canadian naval history";[297] ultimately, however, it was too restrictive as a "niche" role, especially to a Trudeau government that assessed strategic ASW (the offensive prosecution of Soviet ballistic-missile firing submarines as opposed to defensive convoy escort) as inherently destabilizing. Instinctively, Canadian naval commanders fell back to the traditional practice of getting more out of their existing fleet, and they increasingly turned to technology to assist them. Nearly two dozen aging wartime-vintage destroyers and frigates were scrapped along with the carrier, replaced by only four state-of-the-art DDH-280s (styled as "Sisters of the Space Age"); the conversion of the helicopter-carrying destroyers was limited to the original *St Laurent* class, with the slightly newer *Restigouche* class instead getting fitted to carry the ASROC rocket-thrown anti-submarine torpedo; and a decade later, as a critical part of the DELEX (Destroyer Life Extension) program in the early 1980s, all of those older ships were fitted with the ADLIPS (Automated Data-Link Plotting System).

ADLIPS was very much a stopgap command and control system (CCS), as a "poor-man's" complement to the digital-display CCS-280 (the latter had sit-down consoles for individual operators, while the former grouped officers standing around an oversized horizontal radar display overlaid with computer graphics). But with the associated inter-ship Link-11 now fitted to all ships, ADLIPS helped the bulk of the Canadian Navy keep pace with the rapid developments in computerized C2 systems through the 1980s. Even as the older ships increasingly fell behind in their actual ability to prosecute submarines (especially on the West Coast, which had no helicopter-carrying destroyers), they at least were able to hold their own in NATO and allied exercises, keeping accurate digitized "plots" of the developing scenarios and exchanging computer-to-computer messages simulating weapons engagements.

Tight budgets kept all of this activity narrowly focused on the assigned NATO ASW mission, but ironically enough that was to prove the salvation of the fleet. With the disbandment of

---

[295] Peter T. Haydon, "Mr. Hellyer and the Admirals: The Naval Crisis of 1964-66" (unpublished paper presented to the MARCOM Historical Conference, Halifax, 2002 – publication pending as a Dalhousie University CFPS Maritime Occasional Paper).

[296] On the broader issues related to the decision to scrap *Bonaventure*, see James A. Boutilier, "Get Big or Get Out: The Canadian and Australian Decisions to Abandon Aircraft Carriers," in T.R. Frame, J.V.P. Goldrick and P.D. James, eds., *Reflections on the RAN* (Kenthurst, NSW: Kangaroo Press, 1991, 382-408

[297] Milner, *Canada's Navy*, 175.

NSHQ at the time of unification, the Navy had been banished to the coasts, with the "Commander of Maritime Command (MARCOM)" establishing his headquarters in Halifax.[298] Eventually recognizing this was away from the centre of activity, tentatively in the 1970s and then more boldly through the 1980s, the Navy re-organized a naval staff within National Defence Headquarters (NDHQ) under the mantle of the Chief of Maritime Doctrine and Operations (CMDO). The first product of their new fleet plan, the Canadian Patrol Frigate (CPF), was optimized for ASW, but the CPF concept of operations took into account the fact that the nature of ASW had so fundamentally changed that the new CPFs required the restoration of a general-purpose versatility to the fleet. The detection distances becoming possible with passive towed array sonar (TAS) allowed open-ocean ASW to be waged with widely dispersed formations of ships literally hundreds of miles apart. On a basic technical-procedural level, the exchange of contact information required over-the-horizon communications beyond the capability of the standard line-of-sight UHF Link-11, but the alternative longer-range HF Link was not only too unreliable for high data-rate flows but also too easily intercepted. The solution developed by the USN was satellite communications (SATCOM), at UHF and higher frequencies (all line-of-sight into space and returned on a narrow undetectable "footprint"). Stipulating SATCOM as a standard fit on the CPF meant not only privileged Canadian access to this revolutionary communications development, but also that every ship was a potential command and control platform; described by one historian as "the [modern] equivalent of a First World War vintage light cruiser,"[299] once again the Canadian Navy had compensated for smallness with innovation in getting the most out of limited naval resources. On a more conceptual level, the widely dispersed formations of lonely towed array stations fostered a host of new procedural developments, ranging from the novel staff thinking that led to the acquisition of the anti-ship Harpoon missile as a "defensive" weapon to protect the isolated ships,[300] to genesis of the "Delivery Boy" replenishment routine that saw vulnerable tankers lumbering independently from station to station (previously the tanker was considered a high value unit requiring the very close protection and warships would come to it for refueling in the "Gas Station" routine; this new procedure demanded the Canadian tankers also be fitted with SATCOM and ADLIPS[301]).

---

[298] The guiding principles that established National Defence Headquarters (as described in the Pennefather Report of 1972), envisioned the former service chiefs as operational level commanders with no reason for serving in a strategic level national headquarters; their strategic level force generation and employment responsibilities were to be assigned respectively to the appropriate Associate Deputy Ministers and the Deputy Chiefs of Defence Staff.

[299] Milner, *Canada's Navy*, 290; Hansen, "Kingsmill's Cruisers, 52 makes the same point.

[300] Practically every other navy in the world that acquired Harpoon did so because it is an extremely potent long-range offensive weapon. Ironically enough, it has never been used in combat by any navy in that sense (not even the USN), because the stringent rules of engagement (ROE) that apply in the limited wars that have followed the end of the Cold War require visual sighting of targets and follow-through of weapons.

[301] The Canadian Navy is distinguished from most other western navies in the employment of its tankers: where others consider them auxiliaries crewed by civilians (except for a team of naval communicators), Canada's tankers are a full part of the regular navy, commanded, crewed and employed as any other major warship (another example of getting more from limited resources). Styled an Operational Support Ship (OSS, in contrast to the more common AOR or Auxiliary Oiler Replenishment), in recent years Canadian tankers have seen interesting tactical employment roving the waters of the Persian Gulf; it also has led Canadian naval commanders to foster the concept of using this class of ship as an afloat joint headquarters (see discussion below).

Brought together, these technical developments had significant implications for the nature of command in the Canadian Navy. Previous notions of command and control optimized for close-in ASW no longer were appropriate. At the ship level, individual commanders discovered a new independence, requiring greater emphasis on their initiative and technical competence. Operational level commanders found their tactical horizons broadened significantly beyond the immediacy of close-in convoy escort. At about the same time, the USN was finding the management of modern naval warfare increasingly complicated, and adopted the concept of sub-dividing responsibility for each of the anti-air, anti-submarine, anti-surface and strike duties among "Subordinate Warfare Commanders" who would "command by negation" under the general guidance of the principal commander (that is, juniors are authorized to operate within a pre-planned broad scope of action unless over-ridden by senior commanders). Intriguingly, Canadians dominated the team developing this "Concept of Maritime Operations" (CONMAROPS) in the headquarters of the Supreme Allied Commander Atlantic (SACLANT), and their work became critical to the re-introduction of the Task Group Concept as the basis for the fleet's tactical employment.[302] Since the scrapping of the carrier, Canadian warships had become accustomed to being attached to larger allied formations and split up piecemeal for tactical employment; in the mid-1980s they began to participate in major NATO exercises as a distinctive national grouping. With their new technical anti-submarine and command and control capabilities, increasingly the Canadian task group commander was assigned the major warfare area responsibility as ASW Commander.[303]

Paradoxically, all of this "new thinking" found the Navy in the late 1980s at its lowest operational point in the postwar period. Although the new CPFs were building and the DDH-280s were planned to undergo a complementary Tribal Update and Modernization Program (TRUMP), none of the new or improved ships would be available as operationally effective units until the mid-1990s. Until then, the "rust-bucket fleet" of aging destroyers would have to do. It was at that point that Saddam Hussein invaded Kuwait in the summer of 1990, giving Canadian naval commanders an ideal opportunity to practice operational innovation. Most observers – in and out of the Navy – were stunned when the acting CDS (Vice-Admiral Chuck Thomas, a former Commander of Maritime Command, and the highest ranking sailor in the Canadian Forces) identified Canada's response to the crisis as a naval task group, and not the expected follow-on peacekeeping force. On the face of it, the anticipated anti-air and anti-surface operations in the constricted waters of the Persian Gulf presumed a completely different war in an entirely different theatre from which the Navy had planned. But three of the older ships were quickly upgraded with self-defence weapons and complete communications packages retro-fitted from the new programs, and on arrival in the Gulf the task group commander appreciated that, while the precise operations may have been very different from open ocean ASW, the command and control concepts demanded many of the elements that were becoming common practice in the Canadian Navy.[304] When US Navy commanders looked for a subordinate warfare commander to oversee the Coalition Logistics

---

[302] A more thorough discussion of the renaissance of the task group concept in the 1980s is Peter T. Haydon, "The Evolution of the Canadian Naval Task Group," in Griffiths, Haydon and Gimblett, *Canadian Gunboat Diplomacy*, 95-129.

[303] Eric Grove, with Graham Thompson, *Battle for the Fiords: NATO's Forward Maritime Strategy in Action* (Annapolis, MD: Naval Institute Press, 1991), is an account of the NATO Exercise Teamwork 1988, including a good description of the part played by the Canadian Task Group (CATG).

[304] The naval contribution to the Gulf War is in Morin and Gimblett, *Operation Friction.*

Force (CLF), they turned naturally to the Canadian Task Group Commander – who became the only non-US officer to hold such a high warfare coordinator's position in that conflict.[305] The true novelty of the situation lay in the fact it was exercised within an *ad hoc* coalition structure as opposed to a formal alliance, a point underscored by Captain(N) Dusty Miller's re-definition of C2 to mean "cooperation and coordination."[306]

At the same time, another Canadian naval commander found himself going ashore to establish the first deployed CF Joint Theatre Headquarters. Although not a purely naval event, Headquarters Canadian Forces Middle East (HQ CANFORME) in Bahrain offers an interesting study in the naval command style. Commodore Ken Summers was convinced that, with a modest infusion of additional specialist army and air force officers to his task group flagship staff, he could have run the joint HQ at sea, not in the admittedly cramped destroyer flagship, but from the more spacious tanker *Protecteur* (which had been outfitted as an alternate command ship in the event of damage to the destroyer).[307] His model was a scaled-down version of the USS *Blue Ridge*, the command ship for the Naval Component of the US Central Command (NAVCENT). Summers lost that "battle" to a stronger force of mostly army staff officers in NDHQ, who could not fathom an HQ of such small size (fewer than three dozen all-ranks – the land-based HQ CANFORME eventually comprised over 450 persons). The important distinction between the naval and army philosophies can be seen in Summers' vision of an HQ focused on coordinating operations, whereas the CF (i.e., Army) vision was of one that could exercise administrative oversight as well, and, therefore also needed to include its own support services and force protection (the naval officer considered most of those administrative and security functions to be subsumed within the structure of the ship, needing only slight CTG review and coordination). Recently, the Navy's vision for an afloat joint headquarters has been revived in the concept of operations for the Joint Support Ship.[308]

Canadian naval command roles were to be repeated with increasing success at several instances through the 1990s. Canadian naval officers commanded multinational embargo operations such as those around Haiti in 1993-94, twice in command of STANAVFORLANT operations in the Adriatic off the Former-Yugoslavia, as well as the national joint contribution to East Timor in 1999-2000.[309] The culmination came with Canadian command of "coalition of the willing" anti-terrorist forces in the Arabian Sea elevated to full Task Force status as CTF 151 in the winter and spring of 2003.[310]

---

[305] Richard Gimblett, "MIF or MNF? The Dilemma of the 'Lesser' Navies in the Gulf War Coalition," in Hadley, et al., *A Nation's Navy*, 190-204. One of the few instances of a Canadian naval commander telling his own story at full-length is Duncan (Dusty) E. Miller and Sharon Hobson, *The Persian Excursion: The Canadian Navy in the Gulf War* (Clementsport, NS: Canadian Institute of Strategic Studies, 1995).

[306] Gimblett, "MIF or MNF?", 193.

[307] Morin and Gimblett, *Operation Friction*, 113-125ff.

[308] It is noteworthy that the Joint Force Commander for Operation Deliverance (Somalia, 1992-93), Colonel Serge Labbé, circumvented the crippling personnel ceiling imposed on him by adopting a Summers-like model, going so far as to bring in naval logistics officers to be the logistic watch keepers in the JTFHQ aboard the tanker *Preserver*, because they were the only ones trained to provide broad-based logistical service, thereby reducing the size of staff (in this instance from 9 to 3). See Capt(N) R.W. Allen, "Combined and Joint Operations in Somalia," in Peter Haydon and Ann Griffiths, *Multinational Naval Forces* (Dalhousie CFPS, 1996), 211-213 and *passim*.

[309] On Operation Forward Action, see Sean Maloney, "Maple Leaf Over the Caribbean," 175-17; on Operation Sharp Guard, see Commodore G.R. Maddison, "Operations in the Adriatic, in Haydon and

Operation Apollo and the Global War on Terrorism have brought new challenges for Canadian commanders. At the ship level, they range from: the assembling of "specialist" boarding teams from the normal ship's company (these have been compared to USN Seals or Royal Marines, proof yet again of the Navy's innovative capacity to get more from less); to longer times at sea with relatively little "action" to break the monotony for the majority of the crew not part of a boarding team; to the decreasing number of friendly ports to visit, what with new anti-terrorism force protection measures beginning from the premise that every port (even home) is potentially hostile; to individual frigate commanders occasionally taking on the "Arabian Sea Combat Coordinator" role after the stand down of Task Force 151 in June 2003. At the operational task group level, there has been the progressive shift and expansion of roles, from protection of USN Amphibious Ready Groups, through Al-Qaeda Leadership Interdiction, the continuing enforcement of the UN embargo against Iraq, and the protection of high value units transiting the Strait of Hormuz, all of it requiring the coordination of a variety of national and coalition assets. At the strategic level, there has been the close-run management of a fleet of limited resources at wartime mobilization and nearing the brink of exhaustion.

For all that, Operation Apollo also stands as the realization of what can be termed a "Canadian command style". Throughout the Navy's century of existence, successive generations of senior naval commanders have built versatile fleets able to perform a range of functions commensurate with the nation's role as a middle power. Based around classical notions of cruiser employment but embodied in more cost-effective destroyer and frigate designs, these fleets were not only planned to perform both littoral and blue water operations during peace, but also to serve as a foundation upon which the navy could expand in times of crisis.[311] They are far more capable than most like-sized vessels of other navies, as Canadians came to accept the electronic standards of their US neighbour, ally, and frequent partner in developing their electronics suites. Canadian commanders' historical attention to command and control capabilities made them comfortable in the role of organizing the activities of large numbers of ships. Their cultural background, from a bilingual country with a tradition of multiculturalism, reduced their "otherness," while their long years cooperating with other navies, including easy relationships with the RN and the USN, membership status in NATO, the Commonwealth and the UN made them tactful, diplomatic, and above all not strangers to coalition partners. The compatibility of their communications suites, and their long practice at working with the USN, gave them a lead position in alliance and coalition forces. Their own attention to strict Rules of Engagement made them sensitive to the ROEs of other participants. Above all, however, Canada has a reputation as having no diplomatic, political or territorial "axe to grind," which minimized suspicion on the part of other participants.

Griffiths, *Multinational Naval Forces*, 197-202. Commodore David Morse exercised the second STANAVFORLANT command in 1998-99.

[310] Richard Gimblett, *Operation Apollo: The Golden Age of the Canadian Navy in the War Against Terrorism* (Ottawa: Magic Light, 2004) is a full account of Canadian command of Coalition forces in the Arabian Sea from October 2001 through December 2003.

[311] Richard Gimblett, "A Century of Canadian Maritime Force Development: A Re-interpretative History," in Ed Tummers, ed., *Maritime Security in the Twenty-First Century* (CFPS, Maritime Security Occasional Paper No. 11, 2000), 13-26.

Since the Second World War, the Canadian Navy has become increasingly independent of its parent Royal Navy, and closer to its geographical neighbour, the US Navy. As a small fleet, its greater attention to crew welfare is still distinctively better than larger navies, as are its relations between officers and ratings. As Canada has accompanied the US in the computer revolution, so the Canadian Navy has remained technically closer to the USN than to the RN. Unlike the USN, Canada is conscious of its membership in the NATO alliance, the United Nations, the Commonwealth and other multilateral organizations. Rather than expecting others to adhere to its standards, it strives to maintain communications, both technical and social, with all other nations. This leaves it well placed, with its close relations with the USN, its historical relations with the RN – and its obligation to neither – to serve as a communications exchange between the navies of the world. In a commercial environment likened to a Global Village, the patchwork of coalition navies requires a medium of communication and co-ordination, a role for which Canadian naval commanders are well positioned.

Summary. Canada's navy has always been a small ship navy, and even though many of its senior officers had large ship experience with the RN, their Canadian command experience was with small vessels. As we saw in the previous section of this report, this smallness favoured teamwork and cooperation and more reliance on personal power (e.g., expert, referent, and connection) than on the more traditional position power (e.g., reward, coercive, information, and ecological) employed in large ship command hierarchies. This may be part of the reason why the Canadian naval culture prides itself in a quite enlightened treatment of its sailors compared to some other navies.

The Canadian navy has always been at the forefront of technological change, but it has had to manage this change within a context of restricted budgets and manpower ceilings. The navy's over-riding concern has been how to maintain a degree of independence from the dominant world power (formerly Britain and now the United States), and yet achieve an operationally useful level of interoperability with those forces while maintaining a distinctive Canadian identity.

Yet the Canadian navy started out as a virtual clone, culturally, of the Royal Navy. Since almost all officers' and specialist ratings' training was conducted in Britain and much of their sea experience was with the RN, British naval cultural values were diffused throughout the new Canadian navy. Many of these values, such as mastering the naval profession, stood the RCN in good stead at the tactical level of command. However, at higher levels of command the lack of exposure to the workings of admiralty and experience with higher-level staff work left the RCN dependent on officers transferred on loan from the Royal Navy to expand its strategic- and operational-level staffs during the Second World War.

The small size of the Canadian navy imbued its command culture with two characteristics: a magnified impact of commanders' personalities on command culture and confusion of administrative-operational responsibility. The small number of officers eligible for senior command and the influence of the most senior of them in selecting their successors have exaggerated the influence of senior Canadian naval officers compared to the senior officers of larger allied navies. Whereas the small number of officers available and qualified for staff work has led to a somewhat artificial strategic-operational split between the Maritime Staff in Ottawa and the fleet commanders on each coast.

The Canadian navy's reliance on RN culture changed in the Second World War with the huge expansion of the RCN and with it a massive influx of civilians into the RCN's ranks. The experience of the war and the expansion of the RCN in the Cold War, after its immediate post-Second World War downsizing, combined to provide it with critical mass of personnel necessary to justify creating a Canadian training establishment for junior officers and ratings. While many cultural traditions of the RN persisted in the Canadian navy, the new Canadian training establishments resident in an evolving Canadian society, along with new roles for the navy, slowly but surely created a new uniquely Canadian naval culture. This new naval culture diverged even further from RN culture in the last 30 years of the 20th century with the introduction of French Language Units and the acceptance of women - first in sea trades then in command positions. The Canadian naval culture, then, is built on the keel of the professionalism of the Royal Navy but its superstructure reflects Canadian values and experiences.

Notwithstanding the British base of Canadian naval culture, ever since the Second World War the Canadian navy has absorbed certain aspects of the US Navy's culture. Starting with communications procedures, technical systems, and living arrangements, through the policy of interoperability, the Canadian Navy has adopted more and more of the US Navy's doctrine and SOPs. Therefore, from a combined point of view, the Canadian navy has achieved the "seamless operational integration at short notice" with the US and other allies mandated by the government.[312]

From a joint perspective, however, as we saw in Section 2, there are significant command style differences among the Canadian Army, Air Force, and Navy. In this section of the report, we have seen how these differences have translated into different practical command structures, with the Navy preferring smaller, more compact headquarters, as exemplified by Summers' vision of an operational headquarters in the Persian Gulf War and the command and control model embodied in concepts of the planned Joint Support Ship.

While the Anglo-American tradition is the foundation upon which Canadian naval command style is based, the relatively small size of the Canadian Navy compared to its American and British cousins has resulted in a unique Canadian naval command culture, shaped by Canadian culture and choices in technology. One aspect of this uniqueness is the Canadian Navy's ability to maintain "command parity" with its larger cousins to retain Canada's independence of action in naval operations. For without the ability to maintain a viable command and control framework, the Canadian Navy would have no option but to put its ships under command of larger coalition partners.

"Command parity" was first demonstrated by Murray in the Second World War, as Commander-in-Chief, Canadian Northwest Atlantic area. But it took the Korean War to refresh the lesson learned in the Second World War that to maximize the chances of achieving Canadian strategic and political aims, wherever possible, the principle that Canadian warships on foreign deployments should be under the operational command of a Canadian as a recognizable national naval task group should be respected. This principle was used to inform the work of the Canadians involved in developing the "Concept of Maritime Operations" idea that became the foundation of the Task Group Concept as the basis for Cold War fleet tactical employment. These command concepts, introduced "Command by Negation," a command style seen at the ship or low tactical level previously, to the operational level during the Cold War where "Subordinate Warfare Commanders," by virtue of their expert and information power, could display a type of emergent leadership within a pre-planned broad scope of action.

---

[312] "Shaping the Future of the Canadian Forces: A Strategy for 2020," (June 1999), http://www.vcds.dnd.ca/cds/strategy2k/2020_e.doc ,4.

At the end of the 20th and at the beginning of the 21st century the Canadian Navy has used its command parity capability to exercise high tactical level and low operational level command, such as with the Coalition Logistics Force (CLF) in the first Gulf War, with multinational embargo operations around Haiti in 1993-94, and with STANAVFORLANT operations in the Adriatic off the Former-Yugoslavia. The modern expression of the Canadian Navy's command culture culminated in Operation Apollo, allowing it to adapt to the shift and expansion of its roles in the Arabian Sea in the winter and spring of 2003 to achieve the operational level of command in task force operations (CTF 151). This process was a classic illustration of the environmental-technological-cultural triad.

The re-definition of C2 in coalition operations to mean "cooperation and coordination" reflects the reality of command in the future where coalition operations may predominate. This new paradigm of "cooperation and coordination" appears to emphasize leadership or influence behaviours among peers over traditional concepts of command involving exercising authority over subordinates. Therefore, in coalition operations the leadership concepts of emergent leadership and distributed leadership may be more useful than concepts of authority. In fact one might see the high reputation that senior Canadian naval officers have earned in certain operational command positions as a type of emergent leadership based on three sub-classes of personal power, i.e., expert, referent, and connection, rather than position power.

One could argue that Canada's national culture with its traditions of bilingualism and multiculturalism; Canada's military culture with its history of alliance and UN operations; and Canadian naval culture based on operational and command competence, enlightened leadership and management techniques, and a judicious exploitation of available technology make the Canadian Navy's command style a model for coalition operations.

Section 5: The Development Of Canadian Naval Command And Control Systems

This section of the report provides perspectives of practitioners on Canadian Naval Command and Control Systems.

Part 1 – Canadian Naval Culture

> *Duty is the great business of a sea officer. All private considerations must give way to it no matter how painful it is.*

These words, attributed to the great British Admiral Lord Horatio Nelson, were inscribed over the main door of Royal Canadian Naval College when it was established in 1942 (it later became the tri-service Royal Roads Military College). They describe quite succinctly the basis of the Canadian naval culture. Like so much else in the Canadian Navy, its culture has its genesis and model in the Royal Navy. RCN officers and many chief petty officers and petty officers were the products of RN training ships and establishments. Though this influence has certainly faded over the years, its presence is undeniable and wide ranging.

The Commanding officers of warships have tremendous responsibility and have had to remain focused on the goal of achieving that position from an early juncture in their careers, and even then few will achieve that goal. The moulding of a MARS officer begins in the very earliest days of his or her training. All MARS officers are inculcated with the understanding that it is their responsibility to lead and, should they prove their ability, command. Only MARS officers can command at sea. All other maritime officers, be they Marine Systems Engineering Officers (MSEO), Combat Systems Engineering Officers (CSEO), Naval Architects, or Sea Logisticians are support officers and will never command a ship.

The journey to command is long and difficult - few who set out will make it to the top. As outlined below (An Officer Corps Trained to Command), the MARS career progression goes through a number of generalized and specialized training phases. Regardless of the specific nature of the phase, each phase is long, in comparison to the training undergone by other services, and the demands placed on candidates are substantial. In the end, only fifty percent of candidates who start out in the MARS career path complete the initial military occupation classifications (MOC) training. The MARS career path has earned a reputation for being long and arduous, so much so that a significant number of Naval Cadets just embarking on the training path are intimidated by the challenges, and attempt to transfer out of the MARS occupation.[313]

On the other side of the coin, there is a sense of pride among those officers who have made it through the training system for having accomplished the task. In part it comes from having survived the constant scrutiny of the Commanding Officer. MARS officers, unlike officers in any other arm of the CF, work and report directly to the Commanding Officer for a significant portion of the time. The most junior bridge Officer of the Watch (OOW) reports directly to the commanding officer for his or her entire watch. They must learn quickly how and when to report and how to instil in the Commanding Officer a confidence in their grasp of events, their recommendations and their ability to manage their responsibilities effectively.

---

[313] One of the authors was asked to speak with Third and Fourth Year Cadets at RMC in 1997 in the MARS classification to assuage some fears they had concerning the training regime that lay ahead of them. Several cadets expressed the view that the training of MARS officers was too long and too hard. Many wanted to be transferred to any classification besides MARS.

As OOW, she or he has been delegated charge of the ship by the Commanding Officer. Charge is defined as the "the responsibility vested in the Commanding Officer for proper and safe movements and operation of the ship and her company."[314] The OOW to whom charge has been delegated exercises command over all persons onboard except the Commanding Officer and Executive Officer. Given the high level of responsibility that every OOW has, Commanding Officers scrutinize their bridge officers carefully before, and after, entrusting them with charge of the ship. The possession of a Bridge Watchkeeping Certificate[315], which formally indicates the competence of the bearer to assume the responsibilities of charge of a ship at sea, is not a guarantee that this responsibility will automatically be bestowed in every circumstance. The OOW must work diligently to gain and maintain the trust and confidence of the Commanding Officer. Maritime Command Orders (MARCORDS) states that "The CO shall not entrust charge of the ship at any time to anyone unless the CO has been satisfied that such person is competent to take charge of the ship."[316] Every OOW soon finds that the Commanding Officer spends a significant amount of time on the bridge throughout the day. During particularly close navigational or dense vessel traffic situations the commanding officer is likely to remain on the bridge throughout – often sleeping in his or her bridge chair.

While the Commanding Officer is on the bridge, she or he is observing the performance of the bridge team and often critiquing the performance of the OOW along the way. Commanding Officers expect their OOWs to be completely aware of all elements within his or her responsibility, to anticipate and plan for future requirements and to take decisive and appropriate action when required. The MARS officers who succeed in these tasks develop an air of self-confidence and "bridge presence" that distinguishes them as leaders. It is this air of self-confidence that MARS officers carry with them as they assume increasing levels of responsibility.

The requirement to make quick and often bold decisions shapes naval commanders into competent, confident and even slightly arrogant personalities. They often appear quick to take decisions and generally they abhor a piecemeal approach to situations. Many a junior MARS officer has been advised by his Commanding Officer not to "nibble" in their manoeuvring of the ship or in their approach to a problem. The need for speedy reaction in operational circumstances has also led to a very direct, even curt leadership style on the part of many naval commanders. As a British naval commander during the Falklands War put it: "Commands throughout the force became more terse at all levels. They say the first casualty of war is always truth. In our case, I believe it was politeness..."[317]

---

[314] MARCORD 4-15, Vol 1, Part IV. The specific duties associated with Charge include conning the ship, supervising the watch on deck, safety, conduct and appearance of the ship, machinery state restrictions and operation, man aloft procedures, degree of readiness monitoring and changes, operation of boats, station keeping, safe navigation, maintaining a lookout, collision avoidance, upper deck access control, turning over the watch to the next OOW.

[315] Each MARS officer is given a Naval Operations Certificate of Competence book that is signed off as they achieve levels of competency in naval operations. Level 1 is used to indicate successful completion of MARS classification training and Level 2 certifies that the officer "has been examined and found competent by the Naval Operations Professional Qualification Board." Taken from the author's Naval Operations Certificate of Competence book.

[316] MARCORD 4-15, Vol 1, Part IV.

This description of naval command at the tactical level shows that, from a theoretical point of view, effective naval commanders are expected to employ a wide range of leadership behaviours. While in certain circumstances they must use a directive leadership style in making quick and bold decisions, in other circumstances if time permits ships' captains are expected to use elements of a participative leadership style, by consulting subordinates who possess critical information or expertise, before making a decision. Furthermore, a participative leadership style is also used to develop the problem-solving and interpersonal skills of subordinates, as in the OOW example above. In developing subordinates' skills senior naval officers are also expected to use achievement-oriented (setting difficult but achievable goals, expressing confidence in the ability of subordinates or others to achieve the goals, and providing general encouragement) and facilitative (modeling, coaching, mentoring, guidance, and other types of leader behaviour that either demonstrate a desired behaviour for others or enable its performance by others) leadership styles.[318]

To get to the point of qualifying as an OOW, MARS officers will have put in countless hours completing a self-study package of at-sea learning requirements, they will have stood many watches on the bridge either as a Second Officer of the Watch (2OOW) or as an under-study OOW, and also will have participated in numerous seamanship evolutions. As a MARS officer proceeds along the career path, the levels of responsibility and the amount of work grow. Operations Room Officers have warfare area (ASW, AAW, ASUW, etc.) duties that during operations require them to man their positions in the Operations Room for more than twelve hours a day. All of their administrative, planning and personnel responsibilities are completed outside those hours. In addition, they may spend several hours on the bridge during seamanship evolutions as a Special Sea Duty OOW, where the Commanding Officer relies on their additional at-sea experience for complex ship manoeuvring requirements.

There is no prescribed limit to the number of hours a MARS officer can work in a single day. Many, between standing watch and completing other assigned tasks, work eighteen hours a day or more while a ship is at sea. In so doing, a distinct pride develops in being able to endure long hours of work. A willingness to endure these hours is viewed as a form of preparation for the burden of command, where the Commanding Officer must be willing and able to assess circumstances and make decisions at all hours of the day. During most operational deployments it is not unusual for a Commanding Officer to be woken up a dozen or more times in a night, or to be up all night and later try to catch one or two naps during the day.

The operational naval culture goes beyond merely a strong work ethic. Naval ships are manned with the minimum number of personnel necessary for the efficient combat operation of the vessel. As a result, there are no spare personnel available should people become sick. The loss of any one person means that all others must do more to cover off. Furthermore, depending on the position, there may not be another person who is fully trained or qualified to fulfill the affected person's duties. Warfare directors are good examples of this circumstance. There are normally only two director qualified persons for each warfare area – one for each watch, thus the loss of one director can leave the position empty, with the off-watch director covering off when required or, if this is not appropriate within operational the circumstances, a substitute likely iacking the formal qualifications will have to be assigned. Certainly any serious sickness or injury may preclude a person from continuing their duties; however where afflictions are less severe (a cold, sea sickness, etc.) the expectation is that one's duties come first. Medications that induce fatigue or drowsiness are generally foregone, and one suffers through in the "stiff upper lip" mentality. There are very few "sick days" for those personnel in operational units.

---

[317] Woodward, *One Hundred Days*, 116

[318] For more details on these leadership styles see *Leadership in the CF*, pp. 5-10 – 5-12.

Until recently, the stiff upper lip mentality also applied to family issues for those in operational ships. A ship's natural state is to be away from homeport. Deployments of three to four months were routine and, more recently, six month deployments have become increasingly the norm. Though families had a support mechanism built in through the ship's various messes and formal CF family support organizations, those left behind were expected to manage while the ship was deployed and seldom were those deployed able to return home. The Leave Travel Allowance (LTA) benefit for those deployed for a period of more than six months often went unused, unless the spouse could use the benefit to meet up with the ship during a port visit during the deployment. Events such as the birth of a child, except where unique medical or family circumstances indicated otherwise, were undertaken without the sailor or officer being returned home. Provided the circumstance could be described as normal (i.e., a normal birth prognosis), ship's operations took priority over these family events. Though attitudes have moderated considerably in the last decade or so, Commanding Officers are still loath to return a member of the ship's company home or to leave them behind when the ship sails. Along the same vein, most MARS officers and other members of the ship's company quickly develop a mind set whereby they do not want to be repatriated or left behind.

"Ready, Aye, Ready" is more than just a motto for the Canadian Navy. It is an integral part of the naval culture in operations. The motto reflects the constant concern of commanders at sea and on operations for being prepared and stems in large part from the fact that a naval ship is a self-contained entity. Away from port all aspects of life and operations at sea have to be accounted for and managed as the possibilities for remediation of errors is often very limited. As a result, the resources to sustain the ship and meet its operational commitments must be carefully monitored and managed by those in command. This requires that all naval commanders be equally focused on the present and the future. During operations, a large portion of the ship's company will be focused on managing the present circumstances and conducting the operations at hand. However, the Commanding Officer along with key members of the command team, such as the OOW and the Operations Room Officer, must be looking forward in the ship's program to ensure that it will be well positioned and prepared for the next operational or seamanship event. This can be further complicated when ships are operating in company or as part of a larger task group as the command team may have to plan to manoeuvre and coordinate the movement and actions of other ships as well as their own. Failure to adequately plan ahead can lead to simple embarrassment for having missed a rendezvous or potentially to life/ship threatening consequences for having strayed into a weapons firing danger zone. Being in the right place, at the right time, doing the right thing is a matter of professional naval culture that cannot be ignored.

In addition to looking forward, the command team must also be asking the "what if" question in the execution of their responsibilities. The "what if" question is the consideration of unexpected or un-forecasted events during operations. As noted earlier, opportunities for remediation may be very limited during operations therefore those in command must consider what could go wrong and possible courses of action should the worst case develop. In many cases these must be more than just theoretical plans as it may be necessary to implement them almost immediately. A particularly good example is during replenishment at sea (RAS) operations. During a RAS ships are in close proximity to each other (less than 150 feet) traveling at 12-18 knots and connected by a refuelling hose and/or a high-tension wire so that material and personnel can be transferred between vessels. At any time an engineering failure could cause a loss of propulsion power and/or steering. A person could be lost overboard between the ships. A fuel spill could occur or a helicopter could crash on the deck of one of the ships. The commanding officer and the command team must be prepared to act instantly to try and avoid loss of life or to avoid or minimize any damage that might be caused. In these circumstances the Commanding Officer must be prepared to immediately issue direction and the crew must be prepared to act, or circumstances can rapidly degenerate, increasing the level of damage and potential loss of life. The naval culture requires those who command to consistently and adequately prepare themselves for all possible outcomes in a given situation.

The final element to be considered within the context of naval culture in operations is that of acceptable risk. In any given operational situation, the Commanding Officer must determine the possible consequences that a particular course of action is likely produce. Training and experience dictate that most Commanding Officers consider a range or spectrum of outcomes including both the likely outcomes and the worst possible outcome. In addition to drawing from his or her own experience and training, the Commanding Officer will seek advice from selected specialist officers and other personnel in order to determine whether the risk of proceeding with a particular course of action is acceptable given the likely and possible outcomes. Canadian naval culture encourages Commanding Officers to accept a fair level of acceptable risk in the conduct of operations. Having said this, it is difficult to quantify precisely what constitutes an acceptable level of risk. Certainly there is no prescribed formula or definition in any available manual. Each Commanding Officer must make that determination based on his or her own assessment of the situation and the resources available. Nevertheless, the Canadian naval command structure encourages Commanding Officers to tackle risky situations.

A particularly good example of this is a rescue at sea performed by HMCS *Calgary* in 1995 during Operation Tranquillity. Having exited the Mediterranean Sea on 26 November 1995, *Calgary* was transiting the Atlantic Ocean and due to rendezvous with the US Navy oiler USNS *Leroy Grumman* for a mid-Atlantic fuelling. On 1 December 1995, low on fuel and in heavy weather, the *Calgary* replied to the distress call of the foundering motor vessel *Mount Olympus*, a bulk carrier that was approximately 420 miles from *Calgary*'s position. The risk to *Calgary* was that the fuel consumed to undertake the rescue could endanger her own stability as there is a necessary reserve of fuel to ensure a ship's stability and thus preserve her in the upright position. It was determined that to maintain adequate stability the *Calgary* might have to flood some of its fuel tanks with sea water thus contaminating them and making a portion of the remaining fuel unusable. Despite the *Calgary*'s own fuel state, the Commanding Officer made the decision to proceed and close the stricken *Mount Olympus* at 26 knots as it appeared the vessel was in imminent danger of sinking.[319] During the operation the fuel consumption and stability of the ship were closely monitored so that sea water would not have to be taken on unless absolutely necessary and the *Leroy Grumman* was contacted and requested to alter the RAS position so as to reduce the transit distance. The rescue was completed, as was the planned RAS without having to flood the fuel tanks. The Commanding Officer and the command team had carefully and correctly assessed and reduced the level of risk to an acceptable level.

Canadian naval culture is based on the professionalism of Canada's navy. Expertise is acquired through long and rigorous training under the supervision and mentoring of experienced professionals. Those embarked on the command path in the navy acquire an identity as MARS officers, based on this training, which distinguishes them not only from other environments in the CF, but also from the support branches of the navy. Throughout this training the notion of responsibility is engendered in these officers – responsibility to their superiors, peers, and subordinates all members of the naval profession – for the safe and effective discharge of their duties and professional obligations.

Part 2 – Factors That Have Influenced Naval Command

Duty with Honour, the newly published Canadian Forces' manual, describes the societal requirements to which the profession of arms must respond, and the military principles and the societal values that shape that response. The manual highlights that which the profession represents and that which is expected of it, but it does not deal in any depth with the specific factors that are the distinctive roots of the profession, particularly the characteristics of the three environments – army, navy and air force. These factors, in the context of the navy, are discussed below, from the perspective of a practitioner. The factors particular to the navy are also briefly examined from a theoretical perspective at the end of this part of the report.

The principles and values of the profession have been learned by the military, and by the society in which it exists, either in response to situations that have been experienced, or by observing the experiences of other societies and their militaries. By assessing those experiences, the fundamental factors that are at the root of the profession of arms can be determined. However, that determination will vary somewhat from one society's military to another, due to the variances in the factors that affect each. Similarly, there are variances in the factors that affect navies and armies and air forces. In some ways, the similarities amongst navies are greater than the similarities amongst the navy, army and air force of the same nation.

For purposes of this study, it will be useful to separate the factors that affect all branches of the Canadian Forces from the unique factors that affect the navy's professional attributes and thence its distinctive command style, from a practitioner's perspective.[320] Seven factors common to all branches of the Canadian Forces and 13 factors unique to the navy are discussed next.

---

[319] The facts of distance and vessel names are taken from the 1995 Annual Historical Report from the HMCS *Calgary*. The statements concerning the decisions made and the factors considered are from the author's own recollection of events. The author was the Weapons Officer in *Calgary* at the time and played an active role in the decision process.

Factors Common to the CF – Society's Expectations

1. Obedience to Civil Authority.

   The hierarchy of values of the individual service person is such that no force could be used, or action taken, that is contrary to the direction of the elected Government operating within the rule of law.

2. Service

   The expectation that the Canadian Forces have a duty to the Nation, to react to emergencies, which may necessarily include the use of force and the individual service person's acceptance of unlimited liability.

3. Discipline

   The requirement of the Forces, equipped with the ultimate destructive power of the society, to be trained and to practise the ultimate discipline.

4. Humanitarian Values Balanced With Combat Skills

   The Forces will meet every critical situation in a way that does not violate Canadian humanitarian ideals, and with the highest level combat skills when required.

Factors Common to the CF – Lessons Learned From Operations

5. Leadership

   The need to balance high-level fighting discipline with Canadian egalitarianism.

6. Command

   The need for Canadians to command Canadians, except in established collective security relationships where there are policies and organizational processes to protect national prerogatives and sovereignty.

---

[320] The Factors Particular to the Navy and the resulting Canadian Naval Command Characteristics, are the observations of three former naval officers who played roles in authoring this report.

The six factors enumerated above are similar to those used in *Duty with Honour*, based on the professional construct, to describe and define the profession of arms in Canada.[321]

7. The Worth of the Senior NCM (Chief Petty Officer and Petty Officer)

   Perhaps nowhere in the world's armed forces are the Senior NCMs as skilled, as valued and as able to be delegated high levels of responsibility as in the Canadian Forces. This factor is also a result of the inclusive nature of the profession of arms in Canada.[322]

Factors Particular to the Navy

As noted earlier in this part of the report, "duty" is the overarching concept, or word, that encompasses the attributes, or command characteristics, prized by and expected of an officer in the Canadian Navy. These characteristics can be attributed to natural, societal and technological factors, and to lessons learned, including those acquired from history and influential allies. While to some extent, the factors that follow are held in common with other navies, the influence of each has contributed uniquely to the command style of the Canadian Navy.

1. Lessons Learned From Other Navies

   Naval customs, traditions, procedures and policies inherited from the Royal Navy, and naval procedures and attitudes influenced by the USN are discussed in Section 3 of this study, "The Historical Development of the Anglo-American Naval Command Culture."

2. The Sea - The Enemy at the Gates

   This factor is held in common with all other navies. Navies send ships out from safe harbours to carry out their duties above, on, or under the surface of the world's great waters, where those ships face the continuous threats posed by flood, fire, adverse weather (hurricane, icing conditions, fog), grounding, and collision. The challenges posed by and in that liquid medium are sufficient that the civilian profession that takes a ship in well-ordered fashion from one port to another is amongst the most advanced of professions, in terms of the specialized skills and knowledge. The professionalism of a naval ship's officer encompasses a large seamanship, ship's systems and navigation component, which is quite apart from the skill set required of the warrior.

   Accordingly, it is not an exaggeration to say that to some extent a warship goes to war every time it sails. It would be unprofessional for a ship to leave harbour without being ready to meet the worst that the sea can do. Additionally, since the strength and usefulness of navies relies on their ability to reach points of crisis and operational areas quickly, the requirement to be ready to sail is a continuous requirement for most ships' companies. That high readiness level, combined with the reality that ships must be able to meet the challenges posed by the sea, means that the stress on the ship's company, in particular the commanding officer, is continuous. It dictates high standards of performance, achieved by training and practising unceasingly. The Sea Safety part of the Workup process must always be met, and each ship will carry out the many required sea safety and emergency drills often to ensure that the necessary standard is achieved. To assist ships and to set the standard, the Navy has full-time Workup Staffs, formally called the Sea Training Staffs, one on each coast. Nevertheless, ships do not carry Workup Staffs routinely. It is the responsibility of the commanding officer to maintain safe sea going standards.

---

[321] *Duty with Honour*, 10-34.
[322] *Duty with Honour*, 11.

The Command Characteristic. One of the professional requirements of the naval commander is to meet or exceed the professional standard of the mariner. To achieve that, naval commanders, trained for command, possess a ruthless determination to ensure that the ship is ready

3. The Virtue of Being Ready.

Readiness. Recently, the Canadian Navy has been lauded for its incredible ability to ready a huge proportion of its fleets for service in Operation Apollo in very short order. At the same time, critics have suggested that, if the navy has resources such that it can make itself ready so quickly, it must be too richly resourced. It should be understood that the current CF readiness structure is based on an army model that assumes that training personnel for a specific operation and mounting the required support organization often takes weeks, if not months. For reasons that are explained also at Naval Factors 2 and 5 of this Part, the navy is ready by virtue of the facts that a) when a ship is manned with a ship's company it will be made ready for sea, and b) because a ship is stored and ammunitioned it has, for the most part, its logistical train built in.

This distinction is important because there are a number of tasks that navies do well and others that they do not do as well. In terms of the tasks they do well, navies, supported by air forces, can control sea space, protecting it for friendly use and denying it to others. Navies are also good at creating a presence, which can have an effect out of all proportion to the combat power of the naval forces involved and is often as much a political statement of national or coalition intent as it is the positioning of forces for military operations. Furthermore, in positioning to make a statement, navies can move much faster than large land or air components. In terms of projecting force ashore, however, navies have only modest combat power through organic air power, cruise missiles and marines. In terms of taking a large area of a capable enemy's real estate and holding it, that is the business of armies and air forces. Navies simply do not have capability to do that. Nevertheless, even the modest ability of navies to project combat power ashore is hugely important. A naval force is able to move quickly to a relatively poorly defended coastline, to establish local air superiority and a beachhead, before defensive forces can be adequately mobilized. So it is that large-scale combat operations are a joint venture, where large armies and air forces should seek to exploit the initial gains of navies, after which navies are left with the tasks of controlling sea space so that armies and air forces will continue to be supplied, and of denying the enemy the ability to interfere with our operations. Accordingly, a nation that keeps its navy at the same readiness posture as its army cannot exploit the navy's strengths, which in turn weakens the nation's overall ability to make the most effective response possible.

Despite the small size of the Canadian Forces and the fact that Canada has little capability to exert military power strategically, the argument for a highly ready navy is no less strong. A number of national tasks argue for maintaining high naval readiness levels, including SAR and support to enforcement operations such as arrest and apprehension, while at the same time being able to provide an early national response as occurred during the Haitian Embargo, the Gulf War, or Operation Apollo.

The concept of readiness varies from one military environment to the other. The navy is particularly conscious of the need to be ready to sail quickly, because it must be ready for any number of domestic or expeditionary challenges that may arise at short notice. Further, ships have to be ready to operate in several warfare areas simultaneously, involving enemy and allied forces over, on and under the ocean. The breadth of the requirement for which the navy must be ready is incredibly broad. As a result, navies will be selective in choosing what tasks they will be prepared to do well, with some navies being far more broadly capable than others.

The Command Characteristic. A characteristic of naval command is for ships to be ready to move quickly to conduct a variety of operations at all times. This concept of a broadly capable readiness comes with a cost.

4. An Officer Corps Trained to Command

The Surface Ship Command Qualification Process. The process to be certified to command a major Canadian warship is arduous and long. The typical process is as follows. Assume that the officer starts in his or her early 20s. After becoming qualified at the Naval Officer Training Centre in Esquimalt (some fail at this point), the officer joins a ship to become, amongst other things, certified to stand watch as the Officer of the Watch (Harbour). This is the certification that allows the officer to be given delegated responsibility for the ship in harbour. The next step is to acquire certification to stand watch at sea as the Officer of the Watch (OOW). This certification allows the CO to delegate to the OOW some of the authorities otherwise held by the CO. While the OOW is supported by a variety of specialists, it is his or her responsibility, in the absence of the CO from the Command Position, to keep the ship safe navigationally, in manouevring situations and in emergencies, and to co-ordinate the routine of the ship. A sizeable proportion of officers fall by the wayside at this point because they cannot acquire the necessary skills. After adequate experience as an OOW, the officer is sent on a sub-specialist course to become a warfare director, navigation officer, or communications specialist, etc. Returning to sea from that course, the officer will often be in the rank of Lt(N) and in his or her late 20s. The officer then puts that specialized training to use, stands watches as OOW (sea and harbour) and takes up other assigned duties. The officer is being given experience and being assessed to see whether he or she is ready to take the Operations Room Officer's (ORO) Course, a specialist course which is about a year long. Sometimes an officer is moved ashore to gain more experience and maturity before being selected for the ORO Course. Most of those selected are in their early 30s. Many are never selected. Normally, graduating OROs go to sea to take up their new role of heading the Operations Room team during their watch. Concurrent with promotion to Lt(N) officers begin to write Part I Command Exams. These are a series of exams from engineering to weapons, from navigation to administration, and more. A proportion of officers do not finish these exams for one reason or another. Once these exams are completed, an officer may apply, if recommended by his or her CO, to sit the Part II Command Exam. This exam is a Board chaired by one of the two fleet commanders, in the rank of commodore, with several commanding officers of destroyers or frigates as members. In addition to the oral part of the Board, a simulator is used to assess seamanship skills. The Board lasts as long as the Board needs to be assured that the candidate is ready, in their view, to take command of a destroyer or frigate. The Board is confident that all the candidates appearing before them have sufficient knowledge; however, its real task is to make certain that the officer is ready to be entrusted with the lives of a ship's company. The questions that are posed by the Board normally put the candidate into operational dilemmas for which there are no easy or correct answers. The pass rate for the Part II Command Exam is about 25 percent. Some officers will try every six months for years until they either give up or the Board tells them they will never be ready. On becoming command qualified, an officer is now eligible to be appointed as the executive officer of a ship. At this point, officers vary in age from their late 30s to their early 40s. Not all are chosen. If, however, an officer is chosen, is successful as an executive officer and is promoted to commander, he or she is then eligible to be appointed to command a destroyer or frigate. At this point, officers vary in age from their late 30s (very rare) to their late 40s, and not all of those qualified to command are selected to command.[323]

Standards. The standard by which naval officers are assessed is the same throughout the navy, and it is those who are in command who establish that standard. This is the standard that permeates the navy. It is not just those in the "command stream" who are held to it. Every officer is, including those who did not succeed in becoming command certified, and the Engineers, Logisticians, Administrative officers, etc._Some have said, in the navy there is but one regiment and it is the navy.

The Command Characteristic. The command characteristic created by the command qualification process is one of competence, confidence and even a touch of arrogance. Arguably, to some extent this characteristic affects the entire navy.

---

[323] The process that leads to an appointment in command of a major Canadian warship was verified during an interview with Capt(N) D. McFadden 15 November 2004.

5. Independence

Separation from the Chain-of-Command. Until the advent of radio, and to some extent telegraph, the commander of a ship or a formation of ships, was isolated from the chain-of-command until the next letter arrived, or he met someone in authority. That meant the naval commander had to be prepared to take decisions that, for example, might involve the nation in war without any communication with the nation's government. The types of really significant dilemmas routinely faced by the naval commander were many. Today, it might be assumed that, with so many modern communications systems, the commander at sea is no longer isolated. To some extent that is true, but in fact, the modern on-scene naval commander is recognized, in many situations, as being the best authority in the chain-of-command to take the on-scene decision. That is because the on-scene commander is often the one who possesses the best information on the factors that affect the situation. Examples are factors such as local intelligence, personalities, weather, and visibility. In that respect the naval commander is often isolated from the chain-of-command.

Generally, naval command understands that its role within the Executive Branch of Government is to represent Canada. The ambiguity often inherent in that responsibility is changing, however, as Canadian Forces' Contingent Commanders are now provided with detailed instructions as to their responsibilities and authority. Nonetheless, naval commanders with or without those instructions are expected to act in situations where they, as on-scene commanders, possess the clearest view of factors, and when an absence of decision from higher authority may require a decision void to be filled.

Reacting to Persons in Distress. Very often situations such as Canadians in danger abroad, search and rescue, attacks by pirates, slaving, ships in distress, people lacking the necessities of life, etc., require an immediate response by the on-scene naval commander. If the commander were to seek direction before acting and that delay accentuated the distress, it is very likely that his or her judgment would be questioned. There is an imperative to respond without hesitation to international conventions protecting human life and liberty. That said, many such situations will not be black or white. For example, the direction by the Canadian Government not to accept refugees onboard Canadian warships during the Haitian embargo flew in the face of the International Convention for the Safety of Life at Sea. There is no doubt, however, that if a commanding officer had failed to rescue drowning Haitians, lest they claim refugee status, he would have been condemned professionally.

Logistical Independence. One feature that greatly distinguishes the navy from the other two environments (or services) is the relative freedom that navies possess logistically. It is a freedom that allows that navy to be incredibly useful in being able to move forces quickly to a crisis area to affect the situation at the geo-strategic level. The initiation of the Haitian Embargo is a good example. In that situation, a phone call from the DCDS to Commander MARLANT, a day or two prior to a likely UN Security Council Resolution, was enough to move a Canadian Task Group, which included an AOR, from Puerto Rican operating areas to a position outside Haitian territorial waters.[324] The day before the United Nations Security Council Resolution was to take effect, the Government decided that Canada would take part. As a result, Canada had a task group, which were the only ships, on station the instant the embargo was in force. It was the logistical independence inherent in a warship, in terms of food, stores and ammunition, and the fuel carried by the AOR that enabled the navy to execute a government task so quickly. That capability, exercised so impressively, was not lost on other nations. In fact, the USN, which led the coalition embargo, was only too happy subsequently to ask a Canadian to command the embargo task group, a role no other navy was asked to perform.

The Command Characteristic. The naval commander has been brought up in a system that encourages and prizes independence. As a consequence, the naval commander is ready to act.

6. Encouraging Risk Taking

Unlike some allied navies, the Canadian Navy has a culture that encourages risk taking. It is expected that, to a reasonable extent, commanding officers will improve their seamanship, and other aspects of their professionalism, by pushing the envelope. Canadian warships go alongside replenishment ships at sea very quickly and are less likely to take pilots in pilotage waters, to use tugs or to avoid tight manoeuvring situations, than warships of some other navies. Reasonable risk taking requires that a good plan be made, risk be assessed properly, and the operation be carried out in a n otherwise professional manner. If these "tests" are met, then a CO is justified in taking risk. In the Canadian Navy, it is rare to see a CO removed from command for a minor collision or grounding, because those events rarely happen and when they do, invariably, the "tests" have been met. The value of this approach is that Canadian COs, and the warships under their command, are prepared to take the initiative and to embark on risky operations when required.

The Command Characteristic. Canadian Commanding officers are both encouraged and able to take appropriate risk.

7. The Competence of the Canadian Sailor

The responsibility levels of the senior non-commissioned members (NCMs), the Chief Petty Officers and Petty Officers, extend into what has traditionally been the officers' role. This is a huge advantage in that it often allows ship and staff officers to delegate technical aspects of operations and to spend more time planning and thinking.

---

[324] UNSCR 875 was approved 16 October 1993 and the embargo was in force 18 October.

Command Characteristic. While it has already been mentioned as a characteristic of the Canadian Forces, it bears repeating that the NCMs of the Canadian Navy are rank-for-rank the best-trained sailors of any navy.

8. The Role Separation of Officers and Sailors

While there is much evidence that senior NCMs are very able to take over traditional warfare director roles, and other roles previously allocated to junior officers, there is one role that stands out in its importance. A lieutenant, or a sub-lieutenant, with a Watch Keeping Certificate has a role that no chief petty officer or petty officer is trained for and therefore has the skill to perform. The Officer of the Watch is responsible for the safety of the ship and for executing many of the CO's responsibilities, when delegated. These responsibilities are significant. The position requires complex skills and knowledge that are hard to acquire. The symbolic importance of COs delegating this responsibility to their qualified junior officers is not lost on sailors.

The Command Characteristic. Early on, those officers striving to become command qualified have skills that even senior NCMs do not.

9. The Status and Aura of Command

The "Old Man". When a commanding officer arrives onboard to take command, the crew is prepared to trust and respect their "Old Man". Partly, they recognize that he or she has been developed through the most arduous and demanding of training systems to acquire the professional certification "command qualified". Partly, they want to respect the CO because they have no desire to worry, as they head to their bunks to sleep, that the captain could be incompetent. In their view, the primary role of the CO is to keep them safe. They are quite aware that the certification system is sufficiently demanding that incompetents do not often become COs. It is equally true, however, that a CO has the power to lose the ship's company's admiration quickly by embarrassing them if he or she is revealed as a poor ship handler, abuses subordinates through the power that comes with the appointment, is slow to take decisions, or is unable to fight the ship effectively.

Another perspective of this command issue could be represented by a sliding scale of the various occupations/professions. One end of the scale represents those who have to work the hardest from the outset to gain the trust of clients/subordinates. The other end represents those who start with considerable respect and then stand to lose it if they fail to meet expectations. COs of Canadian warships would rank close to the latter end of the scale.

The Commanding Officer's Isolation. In a destroyer or frigate of the Canadian Navy, there are four "messes" in the ship. The Sailors have one, as do the Chief Petty Officers and Petty Officers, the Officers, and the CO. If a senior officer is embarked, and the ship is the Flagship, there may be yet another mess for him or her. The CO often eats meals and spends relaxation time alone. Normally, however, the CO will invite one or two officers to dine with him or her every few evenings. On long passages, this allows the CO to socialize and to get to know his or her officers better. On occasion, the Wardroom (the Officers Mess) will invite the CO to dine with them.Also, the officers will normally invite the CO to a games night, or to parties when in harbour and the like. The CO is not expected to be a frequent guest in the Wardroom. The officers expect that in the Wardroom they will be able to relax, free from the person who has such enormous power over them. This isolation also has the effect of accentuating the CO's distinctive aura – that to some extent he or she is on another plane. Isolation lends him or her authority, stature and an aura.

The Command Characteristic. In addition to the power held by the commanding officer of a warship, the organization and the training system of the navy causes the naval commander to possess a significant status and aura of command from the outset, unless it is lost because of a failure to act in a professional manner.

10. Leadership Style

A commanding officer's long experience and training readies him or her to accept the responsibility of command, and the status and aura that accompanies it. At the same time, the CO recognizes that the ship is filled with specialists, each of whom offers insight and information that is precise, up-to-date and therefore valuable to the CO's decision-making process. Accordingly, it is not expected that the CO will be uncomfortable in asking for and receiving advice. However, it would be a mistake to construe that the CO is in any way the head of an organization that operates on the basis of consensus building. Information and advice are asked for and accepted, in making plans and coming to decisions, to flesh out all the factors in the best way possible. Ship's officers, particularly the Executive Officer, are expected not only to offer advice and information, but also to re-iterate advice if they believe that the CO has misunderstood what they have said, or what it means. Additionally, senior advisors are expected to offer unsolicited advice if they believe that it is important that they do so. Once the CO has indicated that he or she has understood, however, it is his or her sole decision.

That said, there are numerous situations where a CO will take a decision without consultation, and those to whom the orders are directed are expected to obey immediately. That is often the case in manouevring, or in fast moving operational and emergency situations. At those times, the ship's company expects and has faith that their CO will take the required decision quickly and well. They do not expect to offer advice in those situations, but will be prepared to do so if asked.

The Command Characteristic. The leadership style of the CO is sometimes authoritarian and never based on reaching a consensus among the command team. On the other hand, when a situation develops that is complex, and there is time, the CO will ask for information and advice. Officers are expected to be frank and not to back down if challenged when giving advice.

11. The Navy's Cultural and Technological Natures

It is a paradox that the navy, an ancient service that treasures its generations' old and sometimes centuries' old traditions, is at the same time a service in which technological possibilities loom so large. In the Canadian Navy, this paradox is very evident. Canadian naval history, after the Second World War is rife with examples of a small navy prepared to take huge risks to develop advanced sonars and towed arrays, the destroyer and helicopter marriage, the data link, the computerized command and control system, not to mention the world-leading technologies incorporated into the Canadian Patrol Frigate. The challenge is to understand how the Navy prizes its traditions, but understands the need to maintain the technological advantage. Some examples of this are described in the next part to this section.

The army is proud to proclaim, "The army equips its men, whereas the navy (and the air force) 'mans' its equipment." In fact, the army has it exactly right. Whereas the army tends to focus primarily on the equipment needed by an individual soldier or a group of soldiers, the navy focuses on the capabilities of the ship or the submarine. The design of these fighting systems is driven by technological and doctrinal imperatives. The navy then trains its sailors to "man" and fight the ship or submarine. Additionally, it should be noted that the Canadian Navy is amongst the best trained of navies.

The Command Characteristic. In general, despite its conservative nature, the Canadian Navy has a surprising ability to adjust to technological possibilities, to the extent that theit is known as a world leader in designing ship's systems, as well as in developing the complementary training requirement.

12. Officers and Sailors Go Into Battle Together

Like the army, and to a significant extent unlike the air force, the "warrior caste" of the navy encompasses all ranks. Unlike the army, however, support MOCs are equally on the front line (literally in the same boat) with the operational MOCs. This is perhaps the greatest single difference in the three main leadership systems of the Canadian Forces. The naval leader, isolated in command, does not have to motivate the crew to follow in the sense that the army leader must. In the navy, helm and engine orders are given and the entire crew heads into battle whether they like it or not. The naval leader, in such a situation, does not worry so much about whether she or he will be followed (unlike the army officer who truly does worry about whether troops will follow their lead), but whether the combination of good training and motivation will be enough for each sailor to do his or her duty when the ship comes under fire. The naval commander's leadership role is very much to ensure that fighting morale remains high. The components of that morale are the beliefs that the team is strong enough and the equipment is good enough to provide a reasonable chance of success and of survival. The key element in assessing the strength of the team is, of course, whether the commander is believed to be strong in tactics and in taking decisions.

The Command Characteristic. The Naval Commander understands the importance of knowing operations inside and out, not just to fight the ship, but to lead effectively. It is very likely that most naval commanders will appear to be aggressive and quick to take decisions during operations.

13. The Ship's Company as a Team

The entire ship's company is a large and intricately trained and organized team. The watch and station bill details up to a dozen duties for each member of the ship's company, depending on the situation. Every sailor has the potential to cause the ship to become ineffective by failing to do his or her duty. Whereas half a battalion can probably produce nearly half the firepower of a full battalion, the same cannot be said of a ship's company. The loss or ineffectiveness of only a few of the ship's company can reduce the fighting power of the ship significantly and it could be lost. The concept of the interdependence of the ship's company is extremely important. The way in which teamwork and that sense of interdependence and trust is achieved is through endless drills and training.

The Command Characteristic. The Naval Commander will do anything in his or her power to obtain and to conduct all of the training necessary to bring the ship's company to the highest level of teamwork and keep it there.

Theoretical Perspectives on Factors that have Influenced Naval Command

The environment component of the "environment-technology-culture triad" defines the physical realm in which naval command is carried out. This reality helps to define the expertise that naval officers must possess as professionals in that they must be competent mariners as a basic requirement to assume command at sea. The environment in which the naval officer must operate therefore determines much of the professional training that is required to produce qualified naval commanders. The environment also sets many of the conditions for the exercise of naval command. For example, the vastness of the oceans and the remoteness of ships from shore-based command organizations have always conferred a certain independence on naval commanders, an independence which persists today despite the connectivity provided by improved communications systems. Therefore, the ability to act independently is a vital characteristic of naval command. Warships at sea also provide an environment that distinguishes naval command from army and air force command in many ways. The fact that a ship's crew all go into battle together defines the naval leader's role as providing the necessary training and motivation to ensure that every member of the crew is willing and able to do his or her duty when the ship is on operations. This last point is particularly important because the interdependence of the ship's company makes it necessary for naval commanders to spend a great deal of time ensuring that the crew can work effectively as a highly integrated team.

The technology component of the "environment-technology-culture triad" is a critical factor in the naval profession as it provides the means by which its members can operate in an inherently hostile environment. Technology is also a major control mechanism for exercising command. The reliance of the team that comprises the ship's company on technology for both its survival and as a command mechanism underscores the need for the technology used by navies to contribute to rather than detract from the ability of naval commanders to complete their missions. The Canadian Navy has been able to quickly adapt to technological change, a topic that will be discussed in more detail in the next part of this report.

The culture component of the "environment-technology-culture triad" is shaped by the environment of the sea and is also influenced by technology. In turn, culture affects many aspects of the naval profession, naval command, and the selection of naval technology. While it is founded on the Anglo-American naval culture, from a practitioner's perspective, the Canadian naval culture has unique aspects. The Canadian Navy has recently demonstrated an impressive ability to be ready for operations on short notice. This readiness is a key part of the Canadian naval ethos. Another key part of the Canadian Navy's ethos is reflected in the effort it devotes to training its officers to assume command roles, particularly at the tactical level. This effort produces not only the requisite professional experience, but also a unique identity among naval professionals qualified to command. This expertise also extends to the NCMs of the Canadian Navy, who are among the best trained in the world. The ethos of the Canadian Navy today also reflects the requirement for its commanders to be able to operate independently and the desirability for them to take appropriate risks, both characteristics that are transmitted to naval officers during their professional development. The nature of a ship's operating environment and the culture of the Canadian Navy have produced two distinctive aspects of command: 1) a demarcation of professional expertise between officers and NCMs where the development of command expertise is limited to officers; and 2) a status of commanding officers that is based on professional expertise and reinforced by their relative isolation on board ship. The sum of Canadian naval cultural factors has produced a highly professional command cadre that values expert advice and input, but expects quick and decisive, even authoritarian, decision-making when required.

Part 3 – Technological Factors

From the time warships first went to sea, their fundamental roles have been to control sea space, to create a presence and to project power ashore. To achieve those roles, the basic functional requirements of a warship have been to float, move, fight and survive. The purpose of the ship's company, the various shipboard organizations and of each piece of equipment in the ship has been to fulfill one or more of those requirements.

One of the broad issues of interest to this study is the question: "what is the relationship between naval command and technology?" That can be addressed through two subsidiary questions. The first is "how do navies respond to major technological change?" The second is "how well do navies generate technological change?"

The answer to the first question is not simple. When, for example, it became obvious that the technology used to pump water from mines could be harnessed to propel ships, the transition from the age of sail was not easy. Most navies recognized the potential of steam engines very quickly. However, cultural changes were slow in coming, which meant that shipboard organizations were slow to adapt. Sail was long gone from the Commonwealth navies, but there were still generous explanations of "Repairing a Spar"[325] and "Sailmaking"[326] in the *1952 Manual of Seamanship*. By that time, those skills were no longer generally required of sailors. Only a few specialists used them when repairing derricks or awnings. On the other hand, a modern example that saw tremendous change in the way shipboard tasks are conducted with nearly immediate and complete adaptation by the Navy was the development of the Global Positioning System (GPS). When the concept of GPS was being developed in the 1970s, naval operators quickly recognized that a huge change to operational procedures would occur, and it did.[327] While the development of GPS was essentially to provide a real-time highly accurate navigation system, many other collateral uses were foreseen well before the system became operational. Before GPS, the nightmares of synchronized operational grids, the floating grid versus the geographically fixed grid, the silent low-visibility rendezvous, the interrupted mining/de-mining operation, the third party targeting problem, etc., were prime contributors to the complexities and "the fog of war". The introduction of GPS (and the concurrent development of computerized command, control, communication and intelligence systems) permitted weapons platforms and weapons to be employed in the revolutionary ways that today characterize naval warfare in the Information Age.

A different approach to the question of how navies respond to major technological change would involve consideration of the two revolutionary changes to naval warfare that resulted in two new branches of the naval service being developed. These changes were brought about first by the development of ships that are able to submerge and surface safely, and second by the development of technologies that would allow aircraft to operate from ships. In both cases, the creation of new branches minimized personnel-based cultural issues because new trades could be integrated with the old trades in the new ships without the rest of the traditional fleet being threatened. In the case of doctrine-based cultural issues, however, it cannot be said that the predominance of the traditional surface ship fleets gave way easily to the ascendancy of naval air and submarine power in the navies of the world, Canada's included.

In answer to the first question, therefore, if a technological change causes major cultural change by upsetting the requirement for many trades and skills, navies might be quick to try to utilize the new technology, but they will be slow to adapt naval-wide training, the personnel structure and shipboard organizations to it. If, on the other hand, the technological change has a major impact on how tasks in a warship are conducted, but it has very little impact on the future careers of personnel, it can be expected that overall adoption of the technology will be fast indeed.

---

[325] *Manual of Seamanship*, Vol. II, BR 67 (2/51), (London: Her Majesty's Stationery Office, 1952), 181-82.

[326] *Manual of Seamanship*, Vol. II, 188-97.

[327] Lynn Mason, "The Effect of an Optimum Positioning System on Naval Operations" (unpublished Canadian Forces College Command and Staff Course paper, 1976).

To examine the second question, "how well do navies generate technological development", let us consider a relatively recent example from the process to design the Canadian Patrol Frigate (CPF).

In the late 1970s, teams were formed to prepare the Statement of Requirement (SOR) for Ship Replacement Project One, later called the CPF Project, and the supporting documentation that would be needed for the Request for Proposal. While those teams had a clear understanding of the type of ship to be designed – a frigate with long-range ASW capability, a helicopter and the capabilities to defend itself – they had a less than coherent idea of what technologies would be built into the ship to achieve those capabilities. It was at this stage that the genius that characterizes the CPF happened. The specialist operators in Chief of Maritime Doctrine and Operations collaborated with some very gifted engineers and scientists from Director General Maritime Engineering and Maintenance and Chief of Research and Development (CRAD), to examine every possible technical option. Some were off-the-shelf proven equipments, both Canadian and foreign. Others were concepts in the advanced research/early development stage in several DND defence research establishments, or developments in Canadian industry most of which had been funded by CRAD. From the latter group, several dozen world-leading technologies were selected, many without a production model. They were all extraordinary developments, selected because they were nearly certain to be winners. A final group of CPF projects grew out of a far-sighted understanding of how far software engineering had developed and would develop, and what could be expected of contractors. This resulted in a number of projects that were to set the CPF apart from, and ahead of, the rest of the world in ship design. Among them, to name but a few, were CANTASS, a superb long-range passive towed array; SHINMACS, an integrated machinery control system; SHINCOM, an integrated communications control system; but most significantly for the purposes of this study, SHINPADS, an integrated command system. In SHINPADS the navy acquired a command system that would allow for both the growth of warship technology and the soon-to-be-realized evolution of command and control systems into network-centric operations. This stage of the CPF design was characterized by a creative and far-sighted options analysis to provide the best technologies possible to meet the functional requirement.[328]

With the basic architecture of the ship and its component parts decided, the Associate Deputy Minister Materiel and the navy then set out to create the technical and design specifications, which together with the SOR, would form the basis of the Request for Proposal. One of the design specification teams had the responsibility of stating the design criteria for the "CFP Command System Concept." The record of their work[329] reveals an entirely logical process. A group of operationally expert naval officers were asked to go systematically through the following steps:

---

[328] The facts in this paragraph are as reported in the 26 March 1999 Interdepartmental Review (of the CPF Project) conducted by PWGSC, an interview with Capt(N) (Ret'd) Roger Chiasson, 15 November 2004, and the recollections of one of the authors.

[329] "The Canadian Patrol Frigate Command System Concept – Design Criteria," (National Defence Headquarters, file number 11900-533-004[CMDO], 30 December 1977).

- First Step – to define mission capability requirements. Let us use as an example the capability requirement "Anti Air Warfare (AAW)," which is "To detect and destroy anti-surface ship missiles and aircraft in order to defend units in company and itself." That capability was then broken down into eight ship tasks, such as: a) conduct surveillance and search by ESM, radar and IR for aircraft and missile threats, b) interrogate air contacts for IFF/SIF returns, etc.

- Second Step – to define command system capability requirements. Continuing to use the AAW example, the team was required to develop a description of what the command system would be required to do in the conduct of AAW. This resulted in words such as detecting, collecting, displaying, identifying, evaluating, and countering being used.

- Third Step – to define the shipboard command system concept. Here, the group developed the concepts of command at the task group and ship levels, and also shipboard organizations and responsibilities.

- Fourth Step – to discuss the integration of personnel and equipment. At this step, the group was permitted to discuss the spatial arrangements of people and machines, and the relationships of people to machines, in the context of the first three steps.

Central to the design process was the development of sequence diagrams, several for each capability requirement, depending on whether the ship was operating alone, with air resources, or in company with other units. These diagrams described in what sequence each piece of equipment and each operator would be involved in each of the tasks related to a capability requirement.

What can be seen from this description is that at this step in the design process, when technical specifications and design criteria were being developed, the process was both rigid and constrained. The group of operational experts gathered for this purpose was limited to stating how selected technologies and equipment would perform both pre-existing and newly generated tasks, suggesting better ways of organizing the ship's company to perform those tasks, and proposing the spatial arrangements of equipment and personnel.

This, of course, is not surprising for the principal reason that all tasks and procedures in warships are inter-related. A warship must be designed as a complete and integrated system. At this stage of the design development and specification process, groups brought together for the purpose of developing design criteria could not create a number of separate designs that could possibly result in ship systems that simply could not fit or function together.

The end result was the production of a warship, the excellence of which has been recognized around the world in many professional publications, including a comment by the editor of *Jane's Fighting Ships*, in which he said, "The Canadian City Class are excellent modern warships."[330] Elsewhere the command system was commented on very favourably, including the following quote in *Naval Forces* which attests to its status as a system that was some distance ahead of the competition:

---

[330] Captain Richard Sharpe, cited in *Report on the Canadian Patrol Frigate Cost and Capability Comparison*, (DND Chief of Review Services, 7050-11-11[CRS]), along with several other testimonials, 26 March 1999, pp. 6-7, from http://www.pwgsc.gc.ca/aeb/text/archive/pfd/cpf_cost_e.pdf.

The Canadian Navy … deserve[s] great credit for getting the first fully distributed surface ship command system into service.[331]

In assessing these examples in the context of function and form, the following can be said:

- Function relates to the roles of navies, the basic functional requirements of a warship, the capability requirements of a warship, and the tasks that flow from the capability requirements. Form is the structural architecture of, and the equipment in, the warship, as well as the organization and training requirements of the ship's company.
- In general, function drives form, as it should, but as seen in the examples discussed above, technological breakthroughs cause changes in capability requirements and the concomitant tasks.
- The extent to which genius can be harnessed to create new technology, for the purpose of improving a warship, is only limited by its basic functions: to float, to move, to fight and to survive.

The Location Of Command. When naval battles were fought in line-of-sight, the Commanding Officer (CO) took decisions and fought the ship from the position where it was steered. In the days of sail, that position was aft on the quarterdeck beside the ship's wheel. Later, technology made it possible for the steering position, and therefore the command position, to be moved forward to a "bridge". However, the advent of radio, large rifled guns, radar, direction finding systems, aircraft, underwater tracking devices, electromagnetic emission exploitation, and defensive and offensive missiles, extended the combat radius of a ship to dozens and then hundreds of miles. As that series of advances unrolled, the need to establish a position in the ship where a) geographically-based information plots of what was happening could be maintained, and b) ship's aircraft, communications, sensors and weapons could be controlled, resulted in the evolution of another command position which, for a variety of reasons, was not on the bridge. In the Canadian Navy, that position is called the Operations Room.

In the early days after the Second World War, the only time that most COs would leave the bridge during operations would be to fight a submarine on whatever plot table was installed. As the RCN became increasingly fixated on ASW, and as Operations Rooms were improved, COs became more used to fighting the ship from the Operations Room. However, COs still tended to go where they felt most comfortable and many remained on the Bridge until circumstances forced them to the Operations Room. Two major developments caused this to change irrevocably – digital computer supported command and control systems and Operations Room Officer training.

Until the development of the Long Operations and Long Weapons Officers Courses in the early 1960s, officers had been trained in a larger number of narrow specializations. Consequently, until Long Course officers began to predominate in the 1970s, too many COs tended to be very strong in seamanship, navigation, and their specialization, but by today's standards were only adequate in the total scope of operational skills. The last "Long" courses graduated in 1972. By then the two courses had merged to the extent that the practical Operations Room Officer (ORO) part of the courses, of approximately six months, was conducted together. But the Navy went one step further establishing a successor course called the Combat Control Officers Course, the predecessor of today's Operations Room Officers Course. These developments ensured that ORO training was able to keep up with and lead the evolutionary changes that were occurring in digital computerized command decision aids. Because of the 10-year gap before an ORO was likely to become a CO, however, it took some time before the majority of COs had been trained in-depth across the combat system of the emerging high-tech warship.

---

[331] Anthony Reston, cited in *Report on the Canadian Patrol Frigate Cost and Capability Comparison*, p.6.

One of the factors that had kept COs on the Bridge in days of the pre-digital computer Operations Room, was the inability of the data compilation and display systems to keep up with the high number of friendly and hostile contacts that often needed to be plotted. The Operations Rooms of the *St Laurent*, *MacKenzie* and *Restigouche* Classes had good information available - visual from the Bridge, radar from a variety of sources, sonar, and electronic warfare signatures - and a significant problem gathering and displaying that information. Some aspects of those early Operations Rooms met the COs' information requirement, such as the state boards displaying various data, but the mechanically driven paper plots, the limited analog inputs to those plots, and the vertical air defence plot were inadequate. They were contact-limited, with the air plot displaying as many incoming hostile air tracks as a crayon-wielding sailor could plot, a Local Operations Plot limited to a maximum of six dynamic visual and radar contacts, and an Action Plot suffering similar limitations. As a result, COs were often on the Bridge sorting out the near-in picture visually and with the Bridge radar display, to keep the ship safe.

In the 1970s, two digital computer supported command and control systems entered the Navy. The first was Command and Control System 280 (CCS 280), for the *Iroquois* Class, and the second was ADLIPS, which was fitted into older ships subject to the Destroyer Life Extension (DELEX) Program. These two systems, particularly CCS 280, allowed much more information to be displayed and manipulated. As will be explained later, the Link 11 capable CCS 280 also allowed the task group commander to shift from voice communication and paper plot technologies, both fraught with shortcomings, to a digital command plot that was capable of maintaining a relatively accurate real-time picture out to about 30 nautical miles.

The Modern Command System Requirement. The decision making process of today's Canadian Task Group Commander is assisted by two essential types of equipment. The first, known as Tactical Data Systems (TDS), is made up of the sensors and hardware which receive, display, and assess information for a single unit or ship. The second consists of a communication network, referred to as the LINK 11 and 14 systems[332], which take the processed tactical information from individual TDSs and pass it to both the Task Group Commander as well as other units. For example, the circles in Figure 5 represent the processing capability of an individual TDS to evaluate inputs from that ship's surface radar, sonar and electronic warfare equipment. The interdependence of the TDS and Link system is then represented by the black arrows in Figure 5, identifying how the analytical data from the ship's TDS is then instantaneously passed between all units.

---

[332] Link 11 sends/receives real-time digital information from one TDS computer to others via UHF or HF radio. That information is the identity, geographical coordinates, and course and speed of each of the dynamic and static tracks selected to be sent by a reporting unit. Thus, all units in a task group will see those tracks, with the accompanying details, on their TDS displays. Link 14 is the same information sent via radio teletype. When it is received, as a paper print out, it is then put into the receiving ships TDS mechanically, or onto a paper plot. Since the advent of Link 11, several new and improved link systems have been developed.

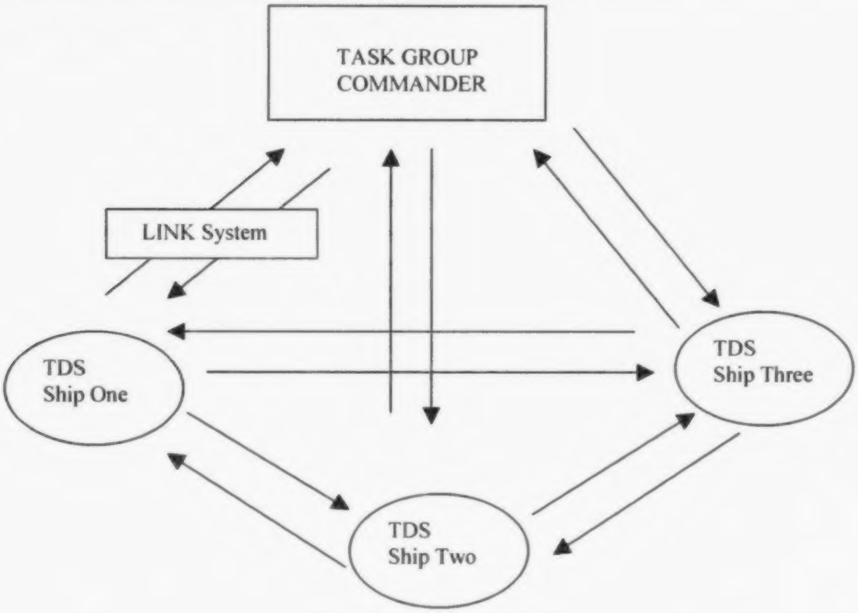


Figure 5. Data Link UHF Radio Net

As a result, tactical displays give a live "real-time" picture of the combat situation as it unfolds and that allows the Task Group Commander to make decisions based on the most current information. Representing the core of the flow of information at sea, this highly effective system took years to develop and was the product of lessons learned during the Second World War in combination with the radical scientific advances throughout the early years of the Cold War.

Whether it was an American Carrier Task Force in the Pacific or a Canadian and British Escort Group in the Atlantic, the experience of the Second World War commander had identified that new technologies were stretching the human mind's ability to process multiple inputs. Improvements in external sensors (such as radar and sonar) and crude analogue attack computers had given commanders the tools to combat new threats at sea. The problem, however, was that all these inputs had created a saturation point whereby commanders were unable to process such information in a timely manner. Indeed, Figure 6 identifies the weakness of the Second World War system:

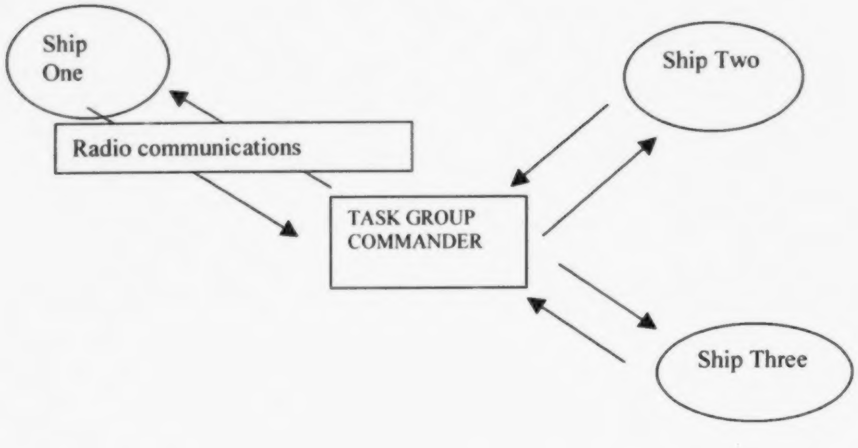


Figure 6. Contact Reporting Radio Voice Circuit

Within the Second World War system each ship processed information and then sent that data to the task group commander. Compared to current standards it was a time consuming process. For example, data on a target identified by Ship One in Figure 6 would first need to run through an internal information organization, meaning that radar operators would plot the contact to determine its position, course and speed. This data would then be passed to the ship's commanding officer who would have it transmitted to the Task Group Commander. Each stage relied on human operators and that greatly slowed the entire process. Given that other ships in the Task Force would do the same, sea-going commanders were often flooded by information. Worse yet, command ships with human operators as communicators had to relay data to the plotters who manually updated tactical boards. Such methods proved too cumbersome as it often led to situations where information was well out-of-date by the time it reached the tactical commander. The crux of the problem was that the Command Information Organization had reached a point of critical mass where it was unable to receive, analyze and correlate data quickly enough to keep up with the speed and stealth of new technical weapons and weapon platforms. [333]

The immediate post-war period brought little relief to this situation as the operation rooms on NATO warships were having trouble dealing with the potential threat posed by the fast Soviet submarines, aircraft, and missiles. Exercises and real life tracking of Soviet contacts had shown that operational plots were reflecting the tactical situation after the fact. Confronted by these new and radical Soviet threats, Canadian naval officers turned to the scientists at the Defence Research Board to help them develop an effective Command Information System. And from that experience the Canadians learned that the best way to tackle such problems was by creating development teams that consisted of scientists who had the knowledge to deal with the nuances of the technology and naval officers who understood the operational environment. This kind of approach was instrumental in the desire to design a Canadian Tactical Management system that became known as the Digital Automatic Training and Remote (DATAR) System.

---

[333] Captain D.N. Macgillivray, "Canadian Naval Contribution to Tactical Data Systems and Data Link Development," in *Maritime Warfare Bulletin*, 1985, 76-84.

The DATAR and CCS 280 Projects. The first true DATAR link was the product of an experiment in 1950 that took information from a target position in a Toronto research laboratory and projected it to a display in Ottawa. The first operational test of DATAR, conducted in Lake Ontario by HMCS *Grandby* and HMCS *Digby* in 1953, automatically plotted the range, course and speed of 64 targets in a grid that covered an 80 by 80 nautical mile area. While impressive, these results were not considered practical for shipboard use since the DATAR's machinery and vacuum tubes took up an unrealistic amount of space at the aft end of the ship. [334] The British and Americans nonetheless learned from this example, and as a result the work pioneered by the Canadians helped spur the movement from analogue to digital systems. Simply put, the willingness of Canadian scientists to take chances with new and unproven technologies gave their allies the confidence to do the same.

Eventually, this breakthrough would allow units to send identifying and positional digital contact information via UHF radio, with the result that all units in a data link net could see, on their electronic plots, the same relative picture of the positions of each of the reporting units and the contacts being reported. This technology, and the concept of its use, have been at the very heart of naval command and control and decision making systems since the late 1960s.

It was initiatives like this that demonstrated the paradox that existed in Canada. On the one hand, the nation was blessed with extraordinary research capabilities, while on the other, it was frequently unable to complete the development of the promising projects that that research had generated. DATAR represented a technological response to an operational requirement that was significantly ahead of Canada's principal allies, nevertheless it was abandoned once the British and Americans began to develop their own parallel systems. Therefore, the Navy's proposal to develop DATAR for the DDE 205 (*St Laurent*) as well as the DDE 257 (*Restigouche*) programs was rejected by the government because of its belief that the British and Americans would soon develop systems that could be adopted for the Canadian Navy. [335] Nor was the government interested in Canadian scientists improving upon the technologies its Allies were advancing, as it was considered that this type of duplication was a waste of money. This spelt the death of DATAR and re-enforced the pattern that while Canadian scientists could think big, those concerned with managing resources would continue to act small.

Nevertheless, DATAR still had an important legacy as it served as an illustration to the British and Americans that a "real-time" data link system was possible. [336] It served as the predecessor to Link 11 and all the Link systems that have followed. It also placed the

---

[334] Macgillivray, "Canadian Naval Contribution to Tactical Data Systems and Data Link Development," 76-84.

[335] Sam Davis, "The 'St. Laurent Decision,' Genesis of a Canadian Fleet," in James Boutilier, ed., *RCN in Retrospect, 1910-1968* (University of British Columbia Press, Vancouver, 1982),187- 207.

[336] For an example of British systems see: Eric Grove, *Vanguard to Trident*, (Naval Institute Press, Annapolis, 1987). For American technical developments see: Malcolm Muir, *Black Shoes and Blue Water: Surface Warfare in the USN, 1945-1975*, (Naval Historical Center, Washington, 1996).

Canadian experience into perspective as it suggested to the scientific community that it could not proceed independently, but instead had to develop its ideas to conform to what Canada's major allies were doing. Yet as the development of the CCS (Command and Control System) for the DDH 280 class warship identified, there were times where Canadian operational demands required solutions that differed from those offered in the US or Europe.

First conceived in mid 1964, the DDH 280 was one of the most sophisticated destroyers of its time. Designed to perform multiple tasks – such as operating in an Anti-air and Anti-submarine environment along with limited shore bombardment as well as surface-to-surface capabilities – the DDH 280 needed more sensors and weapons than any of its predecessors. Moreover, managing all this technology also required a new approach to TDS. That, however, was easier said than done as the Canadian design team responsible for CCS 280 had lost much of its talent after DATAR was scrapped in the late 1950s. As a result, the CCS 280 team turned to their NATO colleagues for help because their project was no different from the vast majority of projects where Canadians had to start virtually from scratch due to the time lag between programs. [337] In the CCS 280 case, however, this pattern proved particularly problematic since the systems under development in the United States and Europe were not up to the task of meeting the technical requirements in the DDH 280 design. [338] The CCS 280 team was therefore forced to set out on its own and – like the team who created DATAR – the technology they produced was cutting edge and revolutionary. [339]

As with its predecessors, the CCS 280 was intended to assist a ship's fighting organization by instantly processing and transmitting data between various sensors and weapons. The genius of the CCS 280 was that it replaced the integrated Command and Control design with a "modular" organization. For example, in early ship designs individual fighting equipment designated to AAW, ASW or EW were integrated into the larger TDS. As a result, if the central processor was damaged the ship lost all its internal data transmitting capability. The CCS 280 was different as each of the ship's fighting capabilities was compartmentalized into sub-systems that could operate independently of the CCS 280 when necessary. [340] Effectively creating a TDS within a TDS, this type of system redundancy had many benefits. As illustrated in Figure 7, battle damage to the CCS 280 – while knocking out both the ship's ability to centralize data and link information back and forth to other assists – would not affect individual ship systems which could still process vital combat information.

---

[337] J.H.W. Knox, "An Engineer's Outline of RCN History: Part II," in Boutilier, *RCN in Retrospect*, 316, 329-31.

[338] Magillivray, "Canadian Naval Contribution to Tactical Data Systems and Data Link Development," 89-90.

[339] For the influence that the 280 program had on the design of American warships see: Captain Michael Potter, *Electronic Greyhounds: The Spruance-Class Destroyers* (Naval Institute Press, Annapolis Maryland, 1995), 41.

[340] KP Farrell, chief member, "The DDH 280 Class Design," An official paper presented at Quebec for the Eastern Canadian Section of the Society of Naval Architects and Marine Engineers, 23 February 1971, DHH, 74/193, pp. 34-6.

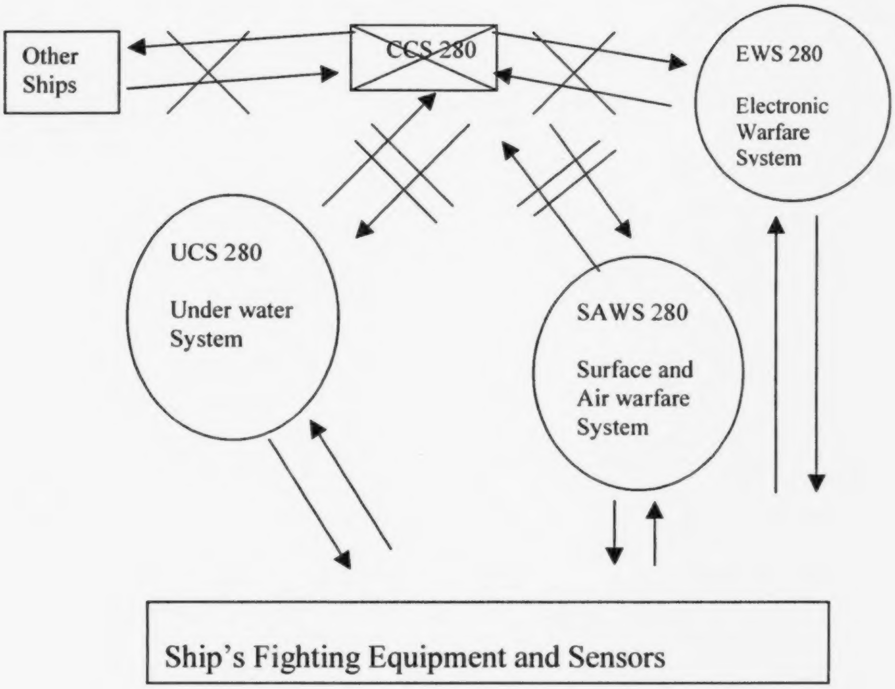

Other Ships
CCS 280
EWS 280
Electronic Warfare System
UCS 280
Under water System
SAWS 280
Surface and Air warfare System
Ship's Fighting Equipment and Sensors

Figure 7. CCS 280 and Warfare Sub Systems

Such innovation brought its own set of problems and it was not long before naval officers identified a major fault with the CCS 280. While the designers had masterfully laid out a plan that clearly defined the means through which the various sub-systems would interact with the main CCS 280, they had failed to create an "overall blueprint for how control of these systems by the Command would be accomplished." [341] Ironically, a system that was intended to assist the decision-making process had only managed to confuse the existing ship organization because it ignored the human element of command.

The issues concerning how the Command and Control System 280 would be used, coupled with the design of the DDH 280 Operations Room, and adjoining spaces, were many. The Operations Room design was a forward row of operator displays with the Commanding Officer's display behind. Fire Control Operators were off to one side. In some of the adjoining compartments were the Sonar Control Room, the Electronic Warfare Control Room, the Link Equipment Room and a Staff Office for an embarked senior officer (but it had no support systems). The concerns of the Operations Officers of two commissioning crews[342] were as follows:

---

[341] Macgillivray, "Canadian Naval Contribution to Tactical Data Systems and Data Link Development," 91.

- The architecture. The arrangement of the displays, the adjoining compartments and the supporting equipment, did not take into account what was commonly referred to as the Action Information Organization (AIO) Equation - first gathering and displaying data, then collation and dissemination of data, followed by decisions and dissemination of those decisions, including control of weapons and sensor systems.

- State boards. There were no state boards. The Operations Room team was expected to input and access all data from the command and control system (CCS 280).

- Command plot. The CO was isolated from his advisors. We believed that they needed to be in close proximity to the CO. They needed to be able to see his body language, the geographical positions or information that he was pointing to, and the tactical pictures that he might draw. Similarly, he needed to see the same from his senior advisors.

- Communications. Communications circuits had to be initiated. Some important circuits, when initiated, consisted exclusively of those operators essential for a specific function - launching or recovering a helicopter for example. Whenever another operator inadvertently broke into that circuit, there was the possibility of danger, or of confusion, because a number of circuits could now be joined and, in the heat of action, it was often not possible to disentangle communications easily. Accordingly, in his position at the hub of the Command System, the CO was forever gathering communications stations. With these extraneous stations came communications not vital to the CO, to the extent that overload often occurred with the loss of vital information.

- The Commanding Officer. The CO was expected to work a display. The one person who needed not to be absorbed in manipulating data and computer buttons, so that he would be able to float above the fray, monitoring the whole, was now an overloaded operator, faced with having to access information and establish communications to seek advice or to issue direction.

To correct these flaws a number of changes were made. State boards were fabricated and installed around the bulkheads of the Operations Room; gradually COs moved from the CO's display and to sit on a high chair behind the Operations Room Officer (ORO), who then manned that display; and some controllers, such as the Air Controller and the Weapons Officer, were put on long headset leads so that when needed they could move aft to interact face-to-face with the CO and the ORO.

The design had not taken into account the functional relationships of the ship's company, particularly the relationship of the CO to his senior officers, including the air, weapon and sensor controllers. There were, of course, other glitches with the CCS 280, but these were all worked out through active consultation between naval officers on the one side and designers and contractors on the other.

---

[342] In 1974, the Combat and Operations Officers of *Algonquin,* the Operations Officer from HMCS *Athabaskan*, and a lieutenant commander from DMCS in NDHQ, met to assess the *Iroquois* class Operations Room in terms of its capability to support the Command System. This is the recollection of one of those officers who is also an author of this report..

Of course, this critique is made with the benefit of twenty-twenty hindsight. It may well be that no process could have revealed these flaws until skilled operators and engineers took the ship to sea and made it work. Once the flaws had been corrected, the *Iroquois* Class combat system, with CCS 280 at its heart, proved to be a winning formula as it allowed for Canadian solutions to a destroyer designed for Canadian needs. [343]

Since then, the CCS of the *Iroquois* Class has been upgraded, so that those destroyers and the CPFs are well equipped indeed. In fact, because Canada has equipped itself to command operations from its destroyers, and because it has committed to being interoperable with the USN, its frigates and destroyers take a backseat to no navy in the area of command and control. As the Canadian Navy's particular expertise at designing Operations Rooms has developed, several recurring themes have become evident.

- In the area of command and control systems, Canada's research achievements are quite astounding, but its record of investment in that research is less so.

- The Navy tends to design its Command Systems and Operations Rooms (form) to meet the operational requirement (function).

- Commanders must be in close contact with their command team members and that team with their supporting teams.

- CCS may be the heart of the decision support system (the command system), but the ability of the sub systems to work independently is important.

- Speed of access to vital information sometimes means that seemingly archaic mechanical displays are best.

- The space plans of operational spaces are contentious, and ergonomic notions often do not stand up to the first use in operations.

Picking up on the last point, during the Lessons Learned Conference on Operation Apollo, held by the Navy in Halifax in the fall of 2003, it was noted that the configurations of the *Iroquois* and CPF Operations Rooms are too constrained in view of the need to install new equipment for and during every coalition operation. In particular, the demands of network-centric warfare mean that specific terminals and supporting equipment for each new net often had to be installed. The four commanders, who commanded the naval task group/task force in turn, talked about the need to have easily re-configurable Operations Rooms so that equipment could be located where needed, and redundant or unused equipment removed.[344]

---

[343] Milner, *Canada's Navy: The First Century*, 258.

---

[344] The Lessons Learned Conference on Operation Apollo was held in the Canadian forces Maritime Warfare Centre 20 November 2003.

Section 6: Conclusions

This report has examined naval command styles in the context of naval culture and organization from historical and contemporary perspectives to gain further insight into how naval command styles in general and Canadian naval command styles in particular will be best served by new technical systems. The following broad issues guided this study:

a. How have history and naval culture shaped naval command styles up to the beginning of the 21st century?

b. What distinguishes naval command styles from army and air force command styles?

c. What are the different levels of naval command? What is the role of staffs in these levels?

d. What distinguishes Canadian naval command style (or styles) from other nations' naval command styles?

e. Is there a set of principles that can be universally applied to all naval services' command styles, regardless of national characteristics or government structure?

f. What is the relationship between naval command and technology?

The conclusions of this report are grouped according to the issues used to guide the study.

How have history and naval culture shaped naval command styles up to the beginning of the 21st century?

Naval command styles vary among navies and among commanders. These styles are affected by such factors as historical experience, national culture, service culture, personality, individual experience, and technology.

Although it is a truism that all navies share many things in common, ranging from the environment in which they operate to the weapons with which they are equipped, those factors also can be the source of differences. For example, the size of vessels and complexity of weapons systems in a navy are important determinants of a navy's culture and therefore its command style.

Canadian naval culture is directly descended from that of the Royal Navy, with recent influences from a close operating relationship with the United States Navy, placing the additional Canadian Navy firmly in the Anglo-American tradition of naval command. This is of import to this study on several levels: 1) from its start, the service accepted as given that it was an integral part of a winning tradition; 2) contrary to the inaccurate portrayals of harsh "Captain Bligh" leadership styles, its officers generally have practiced a quite enlightened treatment of their sailors; and 3) it has maintained an unquestioning belief in "objective civilian control" as a core element of civil-military relations.

This same Anglo-American tradition has fostered increasingly open and independent command styles. Recent scholarship suggests it is axiomatic that navies stemming from a democratic tradition should practice a different form of at least higher-level command than very centralized totalitarian systems, such as in the Nazi German *Kriegsmarine* or more latterly the Soviet Navy. The late-twentieth century development of "command by negation" as the guiding principle for allied formations, coupled with the revolution in information systems, has culminated at the beginning of the twenty-first century in moves toward the adoption of Network-Centric Warfare (NCW) as the key concept behind American C2 frameworks.

Privileged Canadian access to these American systems, combined with a national culture of seeking to act as an intermediary in international crisis resolution, has culminated also in the realization of senior Canadian command appointments in recent Coalition operations.

What distinguishes naval command styles from army and air force command styles?

Understanding differences in leadership among the army, navy, and air force has become increasingly important in an era where joint and combined operations predominate. These differences are caused by differences in national and service cultures that vary not only among nations but among services in any given nation. As we have seen, even in the unified CF, where a significant amount of training and education is conducted in a joint environment, leaders spend their most formative years in a single service culture that shapes their views about what is an appropriate leadership style. For example, unlike army and air force leaders, naval leaders must live and work in close confines with their subordinates, and, especially on long sea voyages, find themselves in a leadership position without a break for months on end.

In some respects navies have clung to tradition more so than armies or air forces, and this propensity, combined with the "decades-long" lives of ships, has made their organizational cultures more resistant to change than the other services. On the other hand navies (including the Canadian Navy), by the nature of the environment in which they operate, usually have been at the forefront of technological change.

A model of naval leadership has been hypothesized here that emphasizes the large role that the technical style of leadership plays in naval leadership. While more research is required in this area, it appears that for naval officers, technical competence is at least as important as leadership competence, because without technical competence these officers could not normally hold a leadership position for long. And the navy is unique among the services in that it regularly subjects its commanders at the tactical and low operational levels to rigorous outside assessment of both their technical and leadership skills.

The example of a Canadian naval commander going ashore to establish the first deployed CF Joint Theatre Headquarters, Headquarters Canadian Forces Middle East (HQ CANFORME) in Bahrain during the Gulf War contrasts the naval command style with that of the army. Commodore Summers believed that, with a modest infusion of additional specialist army and air force officers to his task group flagship staff, he could have run the joint HQ at sea. The important distinction between the naval and army philosophies can be seen in Summers' vision of a HQ focused on coordinating operations. The CF (i.e., Army) vision, on the other hand, was of a HQ that could exercise administrative oversight as well, and, therefore, needed to include its own support services and force protection, whereas the naval officer considers most of those administrative and security functions to be an integral part of the structure of the flagship, needing little attention from the joint HQ commander. The Navy's most recent vision for a deployed joint HQ, on the proposed Joint Support Ship, is based on the naval concept of a small HQ afloat.

From a combined point of view, the Canadian Navy has achieved the "seamless operational integration at short notice" with the US and other allies mandated by the government, particularly the USN given that it sets the world standard for navies in many areas of doctrine and technology. From a joint perspective, however, there are significant command style differences among the Canadian Army, Air Force, and Navy that are evident particularly at the tactical and operational levels. These can become problematic if Canadian forces are working together, such as in a domestic operation.

What are the different levels of naval command? What is the role of staffs in these levels?

Command in the Canadian Navy, as with practically all other navies, is practiced at three essential levels: strategic (headquarters ashore, sometimes referred to as "admiralty" after the British practice), operational (formation level at sea, generally now referred to as the "task group") and tactical (ship unit).

A recurring theme in Canadian naval strategic command has been confusion of administrative-operational responsibility. It is magnified in comparison to the British and American experience because of the "smallness" of the Canadian service. Larger navies have the resources to establish a large naval administration or "admiralty" organization capable of accomplishing both administrative and operational responsibilities. In Canada, however, the tendency has been to centralize administrative oversight in a national headquarters in Ottawa, leaving operational matters to the respective coastal commanders. In times of crisis, however, when central national command becomes desired, the Canadian "admiralty" headquarters invariably does not have the requisite depth to also oversee operations effectively, and *ad hoc* staffs and procedures need to be developed.

At the task group level, Canadian naval staffs have effected a judicious combination of technical decision-support with various personal attributes to carve a unique style of command. Canadian commanders' (and their staffs') historical attention to command and control capabilities have made them comfortable in the role of organizing the activities of large numbers of ships. Their cultural background, from a bilingual country with a tradition of multiculturalism, has also reduced their "otherness" in the eyes of potential partners, making them tactful and diplomatic coalition partners.

At the ship level, the naval leader is isolated in command and does not have to motivate the crew to follow in the same way that the army leader must. While a ship is filled with specialists, each of whom offers information that is invaluable to the decision-making process, it would be a mistake to construe a ship's captain as head of an organization that operates on the basis of consensus building.

What distinguishes Canadian naval command style (or styles) from other nations' naval command styles?

Canadian naval command styles are part of the Anglo-American naval command tradition and as such share many things in common with the other navies that are a part of the tradition, particularly the greater scope for independence of action found in the navies of Great Britain, the United States, Australia, New Zealand, arguably the Netherlands. The professional values inherited from the RN, with an overlay of Canadian social values and to a lesser extent Canadian naval experiences, have resulted in an operational culture that is distinctively Canadian.

Up until the Second World War, Canada's naval culture was based on that of the RN. The Cold War saw shift from the British to the American model as the technical standard for the navies of the world to emulate. The combination of these influences has been important, yet Canada also began to develop its own unique naval culture. This culture had been nurtured, throughout the Navy's century of existence, by successive generations of senior naval commanders who built versatile fleets able to perform a range of functions commensurate with the nation's role as a middle power. Based around classical notions of cruiser employment but embodied in more cost-effective destroyer and frigate designs, these fleets were able to perform both littoral and blue water operations during peace and also to serve as a foundation upon which the navy could expand in times of crisis.

The struggle to maintain the versatility provided by a balanced fleet structure, created by the RCN in the Second World, has had a significant impact on the command style of the modern Navy. The strategic objective of the commanders of the Canadian Navy to this day has been to retain that versatility. After the Second World War, for the first time in its history, Canada committed itself to a fairly large standing navy, with a fleet of large and powerful new ships to be manned by a professional force, which was one of the few in the world that could work effectively and easily with the USN. The size of the post-war navy allowed the RCN, for the first time, to conduct the majority of the peacetime training for its junior officers and ratings in Canada instead of Britain. This patriation of training precipitated a major cultural change in the RCN that accelerated through the 1950s and subsequent decades, as the Navy struggled to keep abreast of evolving Canadian social norms. Furthermore, a distinctly Canadian-designed and constructed fleet and a primarily anti-submarine role strongly influenced the new navy culture, whose manifestations included adopting North American (vice British) living standards on board ship, the re-introduction of the maple leaf on ships' funnels and the "Canada" flash on uniforms, and the replacement of Trafalgar day with Battle of the Atlantic Sunday as the RCN's new "feast day."

Canadian naval command styles are also a product of the unique Canadian experience of operations at sea. This experience is founded on our nation's role as a "middle power" of modest resources, but committed to an active international involvement generally in partnership with a global power. Since at least the Korean War it has been "practically an article of faith" for Canadian naval commanders that warships on foreign deployments should not be employed piecemeal, but wherever possible be kept together as a recognizable national naval task group. Therefore, since the middle of the 20th century Canadian naval commanders have faced the challenge of maintaining a degree of independence from the dominant global power and a distinctive Canadian identity while at the same time achieving an operationally useful level of interoperability with the forces of the dominant global power.

Another key determinant of Canadian naval command styles is the fact that Canada's navy has always been a small ship navy. This environment has favoured teamwork and cooperation and more reliance on personal power than on the more traditional position power employed in large ship command hierarchies. This may be part of the reason why the Canadian naval culture prides itself in a quite enlightened treatment of its sailors compared to some other navies.

The history of Canadian naval command above the tactical level began in March 1943 when the RCN took charge of the Canadian Northwest Atlantic area, the only allied theatre of war ever commanded by a Canadian officer of any service. Although interrupted briefly in the postwar period, this command would be re-established in the mid-1950s and continues to the present day. By achieving command parity with its larger allies, the Canadian Navy was able to maintain Canadian independence of action, and has attempted to maintain it since.

The small size of the Canadian Navy has imbued its command culture with two characteristics: a magnified impact of commanders' personality on command culture and the confusion of administrative-operational responsibility. The small number of officers eligible for senior command and the influence of the most senior of them in selecting their successors have exaggerated the influence of senior Canadian naval officers compared to the senior officers of larger allied navies. Whereas the small number of officers available and qualified for staff work has led to a somewhat artificial strategic-operational split between the Maritime Staff in Ottawa and the fleet commanders on each coast.

Domestically, the post-Cold War Canadian Navy is searching for a new identity by working with other government departments, in such "non-traditional roles" as fishery and sovereignty patrols, constabulary and diplomatic duties, The navy's domestic roles in preserving Canadian sovereignty, such as in the "Turbot Wars," has maintained its relevance in the public's eye. Since 9/11, the focus on the Navy's shared responsibility for the defence of North America has made interoperability with the USN a necessity.

Operation Apollo is a clear example of a Canadian naval command style in overseas deployments. Based on historical attention to command and control capabilities, on technical compatibility with the USN, on a culture that is receptive to and respectful of differences in a coalition, and on extensive experience operating with alliances and coalitions, Canadian commanders were the preferred choice for certain command roles in recent operations in the Gulf.

Is there a set of principles that can be universally applied to all naval services' command styles, regardless of national characteristics or government structure?

Without an in-depth analysis of navies around the world, which is beyond the scope of this report, it is not possible to answer this question posed in the introduction to the report. Nothing uncovered in the course of this study, however, contradicts the generally accepted preliminary conclusion that different societies produce different naval command styles. At its broadest, this suggests that navies stemming from a democratic tradition should practice a different form of at least higher-level command than very centralized authoritarian systems. The following "command characteristics" help to define naval command styles in the Anglo-American tradition, from the perspective of a practitioner.

- **The Professional Standard of the Mariner.** One of the professional requirements of the naval commander is to meet or exceed the professional standard of the mariner. It may well be this requirement that is the primary cause for naval commanders, trained for command, to possess a ruthless determination to ensure that the ship is ready to move quickly at all times, and to be able to take tough decisions without hesitation.

- **Competence, Confidence and Arrogance.** The command characteristic that is created by the rigorous command qualification process used by the navies that share the Anglo-American tradition is one of competence, confidence and even a touch of arrogance.

- **Independence.** Throughout history, and to some extent even in today's networked world, naval commanders had to be prepared to take decisions that might have serious and wide-ranging consequences. Therefore, naval commanders operate in a culture that encourages and prizes independence. Despite the fact that Canadian Forces' Contingent Commanders are now provided with detailed instructions as to their responsibilities and authority, naval commanders without those instructions are still expected to act when they believe that it is necessary to do so.

- **Unique Officer Leadership Competencies.** In the Anglo-American tradition, junior officers undergo a long process of formal training and evaluation conducted and overseen principally by experienced officers. Officers in training receive relatively little instruction or mentoring from NCMs, unlike the army. Therefore, even quite junior command qualified naval officers have skills that senior NCMs do not have.

- **Status and Aura of Command.** In addition to the power held by the commanding officer of a warship, the organization and the training system of the Navy causes the naval commander to possess a significant status and aura of command.

- **Aggressive Leadership.** The naval commander understands not only the importance of knowing operations inside and out, not just to fight the ship, but also to lead effectively. It is very likely that most naval commanders will appear to be aggressive and quick to take decisions during operations.

- **The Primacy of Training.** The naval commander will do anything in his or her power to obtain and to conduct all of the training necessary to bring the ship's company to the highest level of readiness possible and to keep it there. Commanders who do not will find their command appointments shortened and their prospects limited.

What is the relationship between naval command and technology?

Historically, the employment of technical assistance to command has been problematic for many reasons. Foremost among these is the lack of a valid theory to guide commanders. Another important concern is that for a long time technophiles have driven most of the research and acquisition of C2 systems that in turn have been seen as the most important part of the exercise of command. The relative neglect of the human dimension of command in the past has resulted in a number of serious command failures. Until the human dimension of command is studied as carefully as the technical systems that support commanders, those who exercise command will not have all the resources they require to avoid serious problems in the future.

As we have seen, naval culture is resistant to change, and yet navies have usually been at the forefront of technological change. However, as with all branches of the military, if doctrine, organizational structure and organizational culture are not all considered in the design and acquisition of new technology, at best it will not be used effectively and at worst it could impair the commander's ability to exercise command.

NCW is the latest concept to have a major impact on military, especially naval C2 concepts, and it illustrates the tension between the human and technical dimensions of command. The migration of control up the chain of command through new technologies that permit instantaneous communications between commanders ashore and ships at sea has become a major issue, as we have seen. It has been argued that to maintain the integrity of the naval command philosophy a process of "net-centric accountability" must be established. According to this argument, if senior officers and other "peripheral actors" become directly involved in command decisions through NCW, a new accountability paradigm must be developed so that they also share some of the accountability.

Historically navies have responded to major technological change in a number of ways. For example, the requirement to detect and track high speed attacks by missiles or aircraft required the close coupling of radar and weapon systems, and miniaturized electronics permitted computerization of, first functions, then ship's systems. The effect on the lower deck was to create a breed of electronics specialists who were the eyes and ears of the ship. Within limitations, they would function autonomously, and a new style of command, "Command by Negation" was introduced, in which, unless an officer overrode a course of action, they were free to follow standard operating procedures in a combat situation. The introduction of more automated systems on board ship, to reduce the decision cycle, has reduced the role of humans in the decision cycle and the "Command by Negation" style has, of necessity, become widespread in modern navies.

Generally speaking, if a technological change causes major cultural change by upsetting the existing trades and skills structures, navies might be quick to utilize the new technology, but they often will be slow to adapt the naval-wide training, personnel structure, and shipboard organizations required to use the technology optimally. If, on the other hand, the technological change has a major impact on how tasks in a warship are conducted, but it has very little impact on the existing trades and skills structures, the new technology will be adopted very quickly. These factors must be considered in the design and implementation of new systems to avoid unnecessary delays or less than optimal use of the technology.

The Canadian Navy has always been at the forefront of technological change, and yet it has had to manage change within a context of restricted budgets and manpower ceilings. Despite its conservative nature, the Canadian Navy is a world leader in designing ship's systems as well as in developing the complementary training to use the technology effectively.

Unlike the USN, Canada is conscious of its membership in the NATO alliance, the United Nations, the Commonwealth and other multilateral organizations. Rather than expecting others to adhere to its standards, it strives to maintain communications, both technical and social, with all other nations. This leaves it well placed, with its close relations with the USN, its historical relations with the RN – and its obligation to neither – to serve as a communications exchange between the navies of the world. In a commercial environment likened to a Global Village, the patchwork of coalition navies requires a medium of communication and co-ordination, a role for which Canadian naval commanders are well positioned.

Summary

The study of the many facets of naval command style required an eclectic approach that uses a wide range of sources from academic disciplines and practitioners. Therefore, two frameworks were selected as unifying themes for the report. The first distinguished between leadership, as an influence activity potentially done by anyone, and command as a creative and purposeful act reserved for those with legitimate authority. The second was the "environment-technology-culture triad" as comprising the most important determinants of naval command styles. This part of the conclusion summarizes aspects of the report that relate to these unifying themes.

At the tactical level, effective naval commanders are expected to employ a wide range of leadership behaviours. While in certain circumstances they must use a directive leadership style in making quick and bold decisions, in other circumstances ships' captains often use elements of a participative leadership style by consulting subordinates who possess critical information or expertise before making a decision. Furthermore, a participative leadership style is also used to develop the problem-solving and interpersonal skills of subordinates. In developing subordinates' skills senior naval officers are also expected to use achievement-oriented and facilitative leadership styles.

At both the tactical and operational levels, the concept of "Command by Negation" has been used to describe the phenomenon of increased responsibility being granted to subordinates to deal with increased information flow that is beyond the capacity of individual commanders to handle effectively. At the tactical level "Command by Negation" first became common in the

Second World War when technical experts among warships' crews were allowed the authority and responsibility to follow standard operating procedures in a combat situation, leaving senior officers the option to override a course of action. This phenomenon could also be described as recognizing emergent leadership among certain ratings whose expert and information power allowed them to assume leadership roles traditionally reserved for the officers and senior petty officers. The proliferation of fully automated systems, with no humans in the decision loop, is a relatively new aspect of "Command by Negation" that needs to be explored more fully. At the operational level, the concept of "Command by Negation" was pioneered by Canadian naval officers who were instrumental in devising a command system during the Cold War that allowed "Subordinate Warfare Commanders," by virtue of their expert and information power, to display a type of emergent leadership within a pre-planned broad scope of action.

The Anglo-American naval tradition is based on the model of command exercised by officers who were both professional mariners and professional war fighters. But during eras of relative peace, such as during the *Pax Britannica*, naval officers were often required to exercise their diplomatic skills as representatives, in foreign waters, of their governments, although developing these skills were not part of the naval officer's formal training. In the post-Cold War world, many believe that the development of the skills of the warrior-diplomat need to be part of a naval officer's formal education.

Another post-Cold War phenomenon that has had a major impact on naval command is the prevalence of coalition operations where task force commanders may not have the legitimate authority traditionally associated with command. The Canadian Navy's ability to maintain "command parity" with larger navies, like the USN and RN, has not only enabled this country to retain its independence of action in naval operations, but also has often made it the coalition partner of choice to command certain coalition forces. The new paradigm of "cooperation and coordination" in the context of post-Cold War coalition operations appears to emphasize leadership or influence behaviours among peers over traditional concepts of command involving exercising authority over subordinates. In these coalition operations the leadership concepts of emergent leadership and distributed leadership, based on expert, referent, and connection power, may be more useful than concepts of command authority. And the selection of senior Canadian naval officers for certain coalition operational command positions might be seen as a type of emergent leadership.

One could also argue that Canada's national culture with its traditions of bilingualism and multiculturalism; Canada's military culture with its history of alliance and UN operations; and Canadian naval culture based on operational and command competence, enlightened leadership and management techniques, and a judicious exploitation of available technology, make the Canadian Navy's command style a model for coalition operations.

Naval command styles differ among nations, navies and commanders. The factors that influence naval command styles are many and varied, and yet all of them must be considered to understand the phenomenon of naval command. Canadian naval command styles are, therefore, unique in many ways.

Canadian naval command styles are based on a culture that is founded on the professionalism of Canada's navy. Professional expertise is acquired through long and rigorous training under the supervision and mentoring of experienced naval officers. Those selected for the command path in the Canadian Navy acquire an identity, based on this training, which distinguishes them not only from other environments in the CF, but also from the support branches of the navy. Throughout this training the notion of responsibility is engendered in these officers – responsibility to other members of the naval profession their superiors, peers, and subordinates – for the safe and effective discharge of their duties and professional obligations.

The effectiveness of new command and control systems and concepts will in large part be determined by how compatible they are with existing naval command styles. While technology can effect change in some dimensions of naval command styles, other dimensions will be resistant to change, often with good reason. The nature of operations at sea defines many aspects of naval command, and technical systems that take this fact into account will be more effective than those that do not. Likewise naval culture, developed over centuries of war at sea, has many functional aspects that must be considered by those who design technical systems. Therefore, the human dimension of command is critical in devising effective naval command and control systems. As this study has shown, a command and control framework based on new technology, to be effective, must be compatible with the organizational culture in which it resides, because successful innovation in large organizations depends on understanding how technology will impact on the organization's culture and vice versa. This report is a first step in examining these issues from the perspective of naval command.

Annexes

Annex A – Biographies of the Principal Authors

Dr Allan English attended Collège militaire royale de St-Jean and graduated from the Royal Military College of Canada (RMC) in 1971. He then served in the Canadian Forces (CF) for the next 20 years in various operational and instructional positions as an air navigator. He completed his MA in War Studies at RMC in 1987 and taught in the Military Psychology and Leadership Department there until he retired from the CF in 1991. He completed his PhD in history at Queen's University, Kingston, Ontario in 1993. His book, *The Cream of the Crop: Canadian Aircrew 1939-45* examines, among other things, aspects of leadership in the Royal Canadian Air Force. He edited *The Changing Face of War: Learning from History*, which is a selection of essays applying lessons of the past to current and future defence problems. It has been translated into Chinese. Dr English has taught courses in the Theories of War, Air Warfare, and Human Behaviour in War at the post-graduate level in the War Studies and Continuing Education programmes at RMC. He has taught Warfare Theory and History and Command to the first six Advanced Military Studies Courses held at the Canadian Forces College, Toronto. He was an advisor to the Board of Inquiry - Croatia on issues related to operational stress, leadership, and command and control. His latest book, *Understanding Military Culture: A Canadian Perspective*, is published by McGill-Queen's University Press. Dr English was a Senior Research Fellow at the Canadian Forces Leadership Institute 2002-2004. He is currently an adjunct associate professor in the History Department at Queen's University, where he teaches a graduate course in Canadian military history. He is conducting research in the areas of command and control, leadership, and military culture.

Dr Richard Gimblett is an independent historian and defence policy analyst, with 27 years service with the Canadian Navy. He served in ships of various classes on both coasts, including as Combat Officer of HMCS *Protecteur* for operations in the Persian Gulf during the war of 1991. He subsequently co-authored (with Major Jean Morin) the official account of Canadian participation in the Gulf War, published under the title *Operation FRICTION: The Canadian Forces in the Persian Gulf, 1990-1991*. His last appointment was to the Directorate of Maritime Strategy, as lead writer of *Leadmark: The Navy's Strategy for 2020* (http://www.navy.dnd.ca/leadmark/doc/index_e.asp). His PhD (Laval, 2000) dissertation examined the cruise of HMCS *Crescent* to China in 1949. He is contracted with the Directorate of History & Heritage (NDHQ/DHH) in writing *Volume I (1867-1939) of the Official History of the Royal Canadian Navy*. He has contributed naval analyses for the Conference of Defence Associations and the Council for Canadian Security in the 21st Century (CCS21). His writing has been recognized most recently with the 2004 *Robert I. Hendy* award of the Navy League of Canada. His newest book, published in June 2004, is *Operation Apollo: The Golden Age of the Canadian Navy in the War Against Terrorism*. He is a Research Fellow with the Centre for Foreign Policy Studies (CFPS) at Dalhousie University, is on the Visiting Faculty of the Canadian Forces College, and is Vice-President of the Canadian Nautical Research Society.

Vice-Admiral (retired) Lynn Mason has 38 1/2 years of service, first with the Loyal Edmonton Regiment, followed by the RCN and the Canadian Forces. Midway through his career he served as the naval advisor to the Canadian Delegation at the UN Conference on the Law of the Sea. Subsequently, he commanded HMCS *Iroquois*, the Fifth Canadian Destroyer Squadron, NATO's Standing Naval Force Atlantic, and the Canadian Forces College. His senior appointments included Commander of Maritime Forces Atlantic, Deputy Chief of Defence Staff and Commander of Maritime Command. His five years at the Canadian Forces College included appointments as Directing Staff (DS) and Director. Since retiring from the Canadian Forces, he has provided exercise support and lectures to the Navy and the Canadian Forces College. He was the lead author of a C2 study that was incorporated into Defence Plan 2001 where it is called *The Mason Study*. In 2003 he chaired and facilitated the Navy's OP APOLLO Lessons Learned Conference. From 2000 to 2003 he served as the Senior Advisor on Professional Development to the Minister of National Defence and to the Chief of Defence Staff. Currently, he serves on several not-for-profit boards and is Chairman of the Minister of National Defences' Education Advisory Board. Also, he is a Research Fellow at Dalhousie's Centre for Foreign Policy Studies.

Mr Mervyn Berridge Sills is an occasional historian, with some experience of the regular and territorial British Army, and of the Canadian Militia. He spent thirty years in the computer industry, specializing in computer security, both in the private sector and as a consultant to various Federal departments. He is a founding member of, and still works with, the Ottawa Information Technology Security Special Interest Group of the Canadian Information Processing Society. He contributed an essay considering the impact of computers on strategic thinking to the book *The Changing Face of War* (Kingston: McGill-Queen's University Press, 1997), which has been translated into Chinese by Jilin People's Publishing House (2001). He received his MA in War Studies from the Royal Military College, Kingston in May 2000.

DOCUMENT CONTROL DATA

(Security classification of the title, body of abstract and indexing annotation must be entered when the overall document is classified)

1. ORIGINATOR (The name and address of the organization preparing the document, Organizations for whom the document was prepared, e.g. Centre sponsoring a contractor's report, or tasking agency, are entered in section 8.) Publishing: DRDC Toronto Performing: KMG Associates; 83 Gore St. Kingston ON; K7L 2L4 Monitoring: Contracting: DRDC Toronto	2. SECURITY CLASSIFICATION (Overall security classification of the document including special warning terms if applicable.) UNCLASSIFIED

3. TITLE (The complete document title as indicated on the title page. Its classification is indicated by the appropriate abbreviation (S, C, R, or U) in parenthesis at the end of the title)

Command Styles in the Canadian Navy (U)
Styles de commandement dans la Marine canadienne

4. AUTHORS (First name, middle initial and last name. If military, show rank, e.g. Maj. John E. Doe.)

Allan English; Richard Gimblett; Lynn Mason; Mervyn Berridge Sills

5. DATE OF PUBLICATION (Month and year of publication of document.) January 2005	6a NO. OF PAGES (Total containing information, including Annexes, Appendices, etc.) 174	6b. NO. OF REFS (Total cited in document.)

7. DESCRIPTIVE NOTES (The category of the document, e.g. technical report, technical note or memorandum. If appropriate, enter the type of report, e.g. interim, progress, summary, annual or final. Give the inclusive dates when a specific reporting period is covered.)

Contract Report

8. SPONSORING ACTIVITY (The names of the department project office or laboratory sponsoring the research and development – include address.)

Sponsoring:
Tasking:

9a. PROJECT OR GRANT NO. (If appropriate, the applicable research and development project or grant under which the document was written. Please specify whether project or grant.) W7711-037874/001/TOR	9b. CONTRACT NO. (If appropriate, the applicable number under which the document was written.)
10a. ORIGINATOR'S DOCUMENT NUMBER (The official document number by which the document is identified by the originating activity. This number must be unique to this document) DRDC Toronto CR 2005-096	10b. OTHER DOCUMENT NO(s). (Any other numbers under which may be assigned this document either by the originator or by the sponsor.)

11. DOCUMENT AVAILABILIY (Any limitations on the dissemination of the document, other than those imposed by security classification.)

Unlimited distribution

12. DOCUMENT ANNOUNCEMENT (Any limitation to the bibliographic announcement of this document. This will normally correspond to the Document Availability (11). However, when further distribution (beyond the audience specified in (11) is possible, a wider announcement audience may be selected.))

Unlimited announcement

DOCUMENT CONTROL DATA

(Security classification of the title, body of abstract and indexing annotation must be entered when the overall document is classified)

13. ABSTRACT (A brief and factual summary of the document. It may also appear elsewhere in the body of the document itself. It is highly desirable that the abstract of classified documents be unclassified. Each paragraph of the abstract shall begin with an indication of the security classification of the information in the paragraph (unless the document itself is unclassified) represented as (S), (C), (R), or (U). It is not necessary to include here abstracts in both official languages unless the text is bilingual.)

(U) This report is based on a requirement by the Command Effectiveness and Behaviour Section of DRDC (Toronto) to describe and analyze naval command styles in general and Canadian naval command styles in particular as part of a larger project investigating automated command advisory systems.

The report examines naval command styles in the context of naval culture and organization from historical and contemporary perspectives, using recent theories of command and control (C2) to gain further insight into how naval command styles in general and Canadian naval command styles in particular will be best served by new technical systems. The findings of this study will allow designers of automated command advisory systems to maximize the effectiveness of these systems when they are put into operational situations.

Naval command styles differ among nations, navies and commanders. The factors that influence naval command styles are many and varied, and yet all of them must be considered to understand the phenomenon of naval command. Canadian naval command styles are, therefore, unique in many ways. The small size of the Canadian Navy has imbued its command culture with two characteristics: a magnified impact of commanders' personality on command culture and the confusion of administrative–operational responsibility.

Canadian naval command styles are based on a culture that is founded on the professionalism of Canada's navy. Professional expertise is acquired through long and rigorous training under the supervision and mentoring of experienced naval officers. At the tactical level, effective naval commanders are expected to employ a wide range of leadership behaviours. At the task group level, Canadian naval staffs have effected a judicious combination of technical decision–support with various personal attributes to create a unique style of command. This has led to a preference for Canadians to assume certain senior command appointments in recent Coalition operations.

The effectiveness of new naval C2 systems and concepts will in large part be `determined by how compatible they are with existing naval command styles. While technology can effect change in some dimensions of naval command styles, other dimensions will be resistant to change, often with good reason. The nature of operations at sea defines many aspects of naval command, and technical systems that take this fact into account will be more effective than those that do not. Likewise naval culture, developed over centuries of war at sea, has many functional aspects that must be considered by those who design technical systems. Therefore, the human dimension of command is critical in devising effective naval C2 systems. This study has shown that a command and control framework based on new technology, to be effective, must be compatible with the organizational culture in which it resides, because successful innovation in large organizations depends on understanding how technology will impact on the organization's culture and vice versa. This report is a first step in examining these issues from the perspective of naval command.

(U) Le présent rapport s'appuie sur le besoin de la Section de l'efficacité du commandement et du comportement de RDDC (Toronto) de décrire et d'analyser les styles de commandement dans la marine en général et les styles de commandement dans la marine canadienne en particulier, dans le cadre d'un vaste projet de recherche dans le domaine des systèmes−conseils automatisés sur le commandement.

Le rapport examine les styles de commandement dans le contexte de la culture et de l'organisation de la marine, d'un point de vue historique et contemporain, en faisant appel à de récentes théories sur le commandement et le contrôle (C2) pour mieux comprendre comment les nouveaux systèmes techniques pourraient servir au mieux les styles de commandement dans la marine en général et les styles de commandement dans la marine canadienne en particulier. Les constatations de cette étude permettront aux concepteurs de systèmes−conseils automatisés sur le commandement d'exploiter au maximum l'efficacité de ces systèmes lorsqu'ils sont utilisés dans un contexte opérationnel.

Les styles de commandement naval varient selon les nations, les marines et les commandants. Des facteurs nombreux et variés influencent les styles de commandement, dans la marine, et pourtant il faut tenir compte de chacun d'eux si on veut comprendre le phénomène du commandement naval. Ainsi, dans la marine canadienne, les styles de commandement sont particuliers à de nombreux égards. Deux caractéristiques de sa culture de commandement sont attribuables à sa taille restreinte : la personnalité de ses commandants y joue un rôle accru et les responsabilités administratives/opérationnelles sont confuses.

Dans la marine canadienne, les styles de commandement s'inspirent d'une culture basée sur le professionnalisme de la marine du Canada. L'expertise professionnelle résulte d'une longue et rigoureuse instruction, sous la supervision et le mentorat d'officiers de marine chevronnés. Au niveau tactique, on s'attend à ce qu'un commandant de forces navales compétent ait recours à un large éventail de comportements de leader. Au niveau du groupe opérationnel, les états−majors de la marine canadienne ont adopté une judicieuse combinaison de systèmes d'aide à la décision technique et de qualités personnelles diverses pour créer un style de commandement unique. C'est pour cette raison que la préférence a été accordée à des Canadiens au moment de pourvoir certains postes de commandement supérieurs dans les récentes opérations de la Coalition.

L'efficacité des nouveaux systèmes et concepts de C2, dans la marine, sera en grande partie déterminée par leur degré de compatibilité avec les styles de commandement naval existants. Bien que la technologie puisse avoir pour effet de modifier certains aspects des styles de commandement dans la marine, d'autres aspects résisteront au changement, souvent à juste titre. La nature des opérations en mer définit de nombreux aspects du commandement naval et les systèmes techniques qui en tiennent compte seront plus efficaces que ceux qui les ignorent. De même, la culture navale, qui s'est développée tout au long de siècles de guerres en mer, comporte de nombreux aspects fonctionnels qui doivent être pris en considération par les concepteurs des systèmes techniques. En conséquence, la dimension humaine du commandement joue un rôle essentiel dans la conception de systèmes de C2 navals efficaces. Notre étude a démontré que pour être efficace, un cadre de commandement et de contrôle basé sur les nouvelles technologies doit être compatible avec

la culture organisationnelle dont il est imprégné, car dans les grandes organisations, pour qu'une innovation remporte du succès, il faut comprendre comment la technologie influencera la culture de l'organisation, et vice versa. Le présent rapport représente une première étape dans l'examen de ces questions, dans la perspective du commandement naval.

14. KEYWORDS, DESCRIPTORS or IDENTIFIERS (Technically meaningful terms or short phrases that characterize a document and could be helpful in cataloguing the document. They should be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location may also be included. If possible keywords should be selected from a published thesaurus, e.g. Thesaurus of Engineering and Scientific Terms (TEST) and that thesaurus identified. If it is not possible to select indexing terms which are Unclassified, the classification of each should be indicated as with the title.)

(U) Canadian Navy; command styles; culture; command and control